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ABSTRACT

This document is intended to provide updated information on the most important trends in the development of occupations and qualifications in Europe in the face of current demographic, social, economic, technical, environmental, and cultural challenges. It provides a general summary of the most important trends at the macro level, and makes recommendations and draws conclusions for policy and practice in vocational training and further training. Trends covered include the following: (1) training and qualification requirements in the light of foreseeable demographic trends; (2) trends in the participation of young people in education and training; (3) levels of education, qualifications, employment rates among older people; (4) women and vocational training; (5) employment and vocational training of low-qualified people in the European Union (EU); (6) employment trends and labor market development in the EU; (7) trend in occupations and employment in the service sector; (8) levels of employment, education, and qualifications; (9) closing gaps in qualifications; (10) earning power and qualifications; (11) development of occupations and qualifications; (12) environmental challenges; (13) occupational fields, sectors of the economy and their prospects with regard to educational and qualifications requirements; (14) changing work organization and working conditions; and (15) occupational and training profiles with a promising future. (Contains 32 references.) (KC)

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European trends in the development of occupations and qualifications

Volume I

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European trends in the development of occupations and qualifications

Volume I

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Preface

The question of the development of occupations and qualifications affects everybody, but in particular those with responsibilities in the context of the development of education and training policy. This is the case both in Member States and in regions within them, in the organisations of the social partners, and in the relevant EU institutions: the European Parliament, the European Council and European Commission, the Economic and Social Committee, and the Committee of the Regions.

In the past few decades, education and training have acquired high status in the countries of Europe. In particular, in the wake of the structural change in the world of work and in trade and industry, in the wake of internationalisation and globalisation, and in view of the increasing penetration of 'technology' into social and cultural life, the structures of and courses offered by training and further training are playing an increasingly important part.

Earlier rigidities, which still characterise education and training systems all too often today, are now being called increasingly into question as a result of this technological penetration.

The separation between education and training, technical/practical training and theoretical/academic education, application-oriented training and technical training with an academic basis, etc., is increasingly being overtaken by this trend.

The time when work was rigidly divided into executive and conceptual, intellectual and practical workers, intellectual and technical intelligence, would appear to be over. The division into 'two cultures', one based on the humanities and one on science and technology, which had already appeared to be artificially maintained, is now beginning to waver. In industry and in the field of personal services, routine work, assembly line work and purely auxiliary activities have in many cases become obsolete in the EU with the aid of technology and of the new forms of work organisation it makes possible. As a result of extensive capital investment, the jobs of blue- and white-collar workers with minimal qualifications have been replaced to a significant extent by machines. Since the mid-1960s, many of the more demanding jobs of qualified skilled workers and craftsmen have also been performed automatically by machines, robots, flexible production systems, etc.

Since the start of the 1980s, with the increasing dissemination of computer applications and the construction and expansion of new information and communications systems, i.e. with the emergence of the information society, a new stage of development now appears to have been reached. Even intellectual work, the work of architects, artists and designers, mathematicians and physicists, journalists and publicists, lawyers and economics experts, is in principle becoming accessible and permanently available to all men and women. Many people can teach themselves the necessary skills via relatively simple programs and can learn the relevant computer applications. In other words, the sum of knowledge and the sum of human skills and capacities with reference to the current state of the art will very soon be available everywhere, at all times.

Admittedly, this new stage of development has only just begun. However, it is already becoming apparent that a large proportion of the knowledge and skills of highly qualified professionals has now begun making its way into 'machines', and that there is a tendency for them to be similarly threatened by rationalisations, as is already largely the case, with their help, with blue- and white-collar workers with lower-level qualifications.

Meanwhile, less of a change is apparent in the unequal distribution of opportunities as regards access to education, training and employment, based on social and geographical characteristics and origins. Similarly, children and young people whose parents are blue- or white-collar workers with minimal qualifications still have different opportunities in terms of advancement, participation and employment.

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On the basis of expert scientific analyses and conclusions, this publication will concentrate on concrete trends and the associated challenges, which are currently arising and are set to continue in the medium term, against this background. Its aim is to provide suggestions for necessary and desirable developments in programmes of education and training/further training, and to explain the institutional structures that are required in order to progress developments proactively, in a way that is realistic in both social and economic terms.

The decisive trends in the development of occupations and qualifications described in Volumes I and II of this reference publication appear to be obvious. It is time to draw the necessary conclusion from them in terms of policy and practice. In February the European Parliament adopted a resolution on the creation of jobs with future prospects (¹), which makes it clear that there is genuine awareness of the necessary consequences for policy, but that there still appears to be a major deficit in terms of implementation. The chapter on employment in the Treaty of Amsterdam and the national action plans submitted by governments with a view to combating unemployment also underline this point.

Science and research, which will be dealt with in Volume II in particular, have made crucial progress in the past few years. Labour market and occupational research and research into education and training have now obtained a rich store of knowledge. This will now be brought together at European level and made available to a wider public, the first time this subject has been covered in such a comprehensive way.

The volumes now presented continue Cedefop's endeavours to make available to policymakers and practitioners research findings and formulations on key issues of training and its development. This was done with the publication of Cedefop's first report on research into and development of training, 'Training for a changing society', in 1998, which covered a vast range of topics.

Volume I of the current publication summarises, in a convenient form, important findings of relevance to policy and practice. In Cedefop's view, they are of fundamental importance to the development of training and further training in Europe in the next few years, against the background of the research it has carried out and the findings it has obtained over the past few years, and particularly in the context of the thematic network with the same title (²).

As many of the contributions make clear, Europe is not as varied as it is always made out to be. In some cases, the regional and sectoral differences and the differences between particular occupational groups and training stages are greater within a particular country than are the differences between countries, e.g. in comparable regions and sectors or occupational groups. The most significant trends are largely comparable in terms of their key features. Despite continuing cultural differences within the EU, the value systems with regard to education and occupations also appear to be tending to become more similar. The dissemination of information and the increasing speed of communications know no bounds and are leading to increased agreement and improved understanding across language barriers.

A common European training and qualification area is coming into being in parallel to a common labour market. Today's young people have a far more positive attitude to geographical mobility in Europe than did the preceding generation, particularly if they are well qualified or aiming to achieve higher qualifications.

The authors of the expert contributions to Volume II were commissioned by Cedefop to provide brief summaries of the most significant results of their research. Volume II takes the form of a scientific manual. The recommendations included in the two volumes are not necessarily all on the same level, but complement

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(¹) Cf. European Parliament (1999): *Resolution on jobs of the future in Europe*, adopted on 9 February 1999 on the basis of the report by Thomas Mann MEP.

(²) Circle for research cooperation on 'European trends in occupations and qualifications', Ciretoq.

one another and should be regarded in this light. While in Volume I general conclusions are drawn and relatively abstract recommendations made, essentially on the basis of the expert knowledge compiled in Volume II, the majority of the expert recommendations in Volume II are more in-depth and develop their conclusions on the basis of concrete research issues, some of them comparative and some geared to a specific country. This is done with the aid of appropriate quantitative and qualitative methods, which are also of significance for the interests of specific sectors and occupational groups. Naturally it is up to readers to draw their own conclusions for local policy and practice.

This publication could not have been produced without the cooperation of many researchers and experts from the Member States, and in particular of those involved in Cedefop's thematic network on trends in the development of occupations and qualifications. Cedefop has derived great benefit from their expertise and their direct or indirect contributions, and we should thus like to express our particular thanks to them here.

We should also like to thank our colleagues in the relevant departments of the European Commission and at Eurostat for their support. Thanks are due to Cedefop's documentation staff, translators, experts and secretariat and the many others who have been involved in the production of this document.

Johan van Rens, Director
Stavros Stavrou, Deputy Director

'The community of European values is a community of freedom, democracy, human rights, of a socially responsible market economy, and of cultural diversity' (³)

Introduction

It is hoped that this volume will attract a wide readership, and the analyses and comments it contains have therefore been formulated in such a way as to be as widely understood as possible. However, they are based on academic work and research results achieved on the one hand by Cedefop, particularly in the context of the work of its relevant thematic network on the same subject and, on the other, by national and EU-level research and studies and by statistical comparisons carried out by Eurostat, the EU's statistical office. The statements, conclusions and recommendations summarised on page 57 are intended to provide support and starting points for the discussions of players and decision-makers in Member States and the EU institutions, and in particular for those of the social partners and their organisations.

The structure of the content of this volume differs from that of Volume II. It should be regarded as complementing the latter, and brings together key aspects yielded by both individual expert contributions and other EU-level research and publications. As is made clear in both volumes, it is frequently difficult to indicate clear trends in the development of occupations and qualifications. The contradictory nature of some comments, which readers will observe, results from the complexity and 'unpredictability' of a number of important indicators. Other indicators can, however, be presented with a greater degree of certainty, since they have been confirmed by many studies.

Occupation and qualification are 'social constructs', i.e. dependent on general framework conditions, on the context in which they have developed, in historical terms and on the basis of the balance of socio-political power. Thus the way in which they are defined and interpreted can be influenced and shaped. This is particularly true at times of major and radical change, as currently manifested by, in particular, the accelerating dissemination of new information and communication technologies and the generalisation of options for their application, and the globalisation and internationalisation of economies and society.

Without reference to these framework conditions, training and further training are inconceivable, and they have to cope with ever more rapidly changing challenges and societal trends in general. At the same time, occupations and qualifications are not determined by either technology or economic factors, but by the people and players themselves. Meanwhile, under the conditions given, only limited control and almost no planning are possible in relation to the supply of and demand for particular occupations and qualifications. Nevertheless, all players and participants, employees and employers, parents and students need concrete indications of foreseeable trends and developments.

State-of-the-art research, knowledge and experience in a society help the players and those involved in their decision-making. However, the latter also have a justified interest in and concern about issues of equal opportunities, the alignment of economic and social conditions in order to safeguard their livelihood and that of future generations, the competitiveness of regions and industrial centres, the assurance of socially and environmentally aware handling of human and natural resources, etc. In this context, great importance is attached to the inclusion and participation of those concerned – i.e. of actual or potential participants in training and further training – in relevant decisions on the development of training provision in schools and companies.

(³) German President Roman Herzog, citation from his address on the occasion of the 350th anniversary of the Peace of Westphalia, in October 1998.

No longer are the acquisition of qualifications and the assurance of employability of importance only for young people. They are now becoming increasingly important for all sections of the population and, in particular, for older people also. As yet education and training systems appear to be relatively unprepared for this. A number of questions arise in this context, to which there are as yet no concrete and well-founded answers. How can new links be established between working and learning/teaching? Have the social partners and legislators found the right answers that enable them to do justice to the increasing importance of lifelong learning throughout working life? Is the provision in schools, institutions of higher education and companies adequate, and has this provision been adequately shaped? And how does it relate to current working conditions and to work organisation? If wages and salaries were more closely linked to the acquisition of formal and informal qualifications, would this stimulate those with few qualifications in particular to engage in ongoing further training and to keep up to date with developments?

What are the effects of the increasing ageing of the population of working age in the EU and the simultaneous immigration of citizens of non-EU Member States? Are there too many or too few highly qualified people? Will people with minimal qualifications really have ever fewer employment opportunities in future? Is there increasing polarisation of the highly and low qualified and of those with high and low levels of earnings? And what are the potential earnings of the more highly qualified compared to those with lower qualifications?

Do new information and communication technologies have the potential to create new employment opportunities, or are they contributing to job losses? What are the consequences of their accelerating dissemination in terms of the demand for particular skills and qualifications? What new requirements in respect of occupations and qualifications have ensued or will ensue?

In which fields of employment can we anticipate expansion? Is the service sector yielding what many people expect of it? Is the environmental protection sector one on which hopes are pinned in this respect? Are part-time and fixed-term employment relationships typical of particular groups of people with particular qualifications, and how are disadvantaged regions on the periphery of the EU developing? Are small and medium-sized enterprises prospering, and do they have specific needs in respect of qualifications? What are the effects of economic and monetary union on these questions?

Volume I attempts to provide answers to these questions that are at least convincing, if not always definitive, in order to take the debate forward and to give the players starting points of fundamental importance for the development of their own strategies in the context in which they bear responsibility.

Against the background of these questions and challenges, there appears to be a perceptible deficit in every EU Member State in terms of translation into policies and practice. It seems to be clear to all those involved that training and, in particular, further training systems and institutions require comprehensive 'modernisation'. The European Commission and the Council have drawn attention to this in numerous statements, conferences and resolutions; despite this, as yet in most Member States not enough is being done in practice. Is the inertia of education and training systems and the players in them, with the customs handed down to them and the associated 'apparent' certainties, so great that many objective findings have virtually no chance of being translated into policy and practice? This question would merit specific research, particularly in terms of a European comparison, for in recent years some countries have progressed faster than others, particularly with aid from the EU's structural Funds. Examples of this are Ireland and Portugal, and more recently also Denmark, Finland and the Netherlands.

Despite these positive developments, the 'bigger' countries still largely set the tone for the 'small' countries. This may be due to the level of research and science and, in particular, to the more advanced pure research in these countries, which have large numbers of institutions of higher education and universities, and also specialist areas on which to draw, and in which appropriate research promotion institutions exist, whose work naturally also benefits the 'small' countries. Meanwhile, increased cooperation at European level, combined with an exchange of experience and information in the context of training research, could expedite development in the EU as a whole. Some observations will also be made on this aspect. Cedefop expects to devote itself increasingly to this subject in future.

Ciretoq, the thematic research network, has made an important contribution in this context in the past few years. Reports on its recent work and products will be found in Annexes 1 and 2. This publication could not have been produced without the good cooperation in place with research institutes and researchers within the context of this network and beyond it.

Burkart Sellin Thessaloniki, March 1999

I. Training and qualification requirements in the light of foreseeable demographic trends

The population trend in the EU has been investigated by the Statistical Office of the EU in respect of basic trends (1):

This gave rise to the following main comments in respect of the period examined, 1950 to 2050:

1. The EU population's share in the world population has decreased or rather will decrease from around 12 % to just under 4 % between 1950 and 2050. It is currently still the third-largest 'power', with 373 million people, behind China with 1204 billion and India with 944 million.

2. However, the overall population will continue to grow by decreasing percentages until 2023, at which point it will fall back to roughly the current level until 2050. This fall will commence first in Italy, Germany and Spain (between 2008 and 2014), and the last countries where it will occur are the Netherlands, Greece and Portugal (between 2037 and 2040).

3. The main reason is seen as lying in the fall in births in the post-war generation. From around 2010 onwards, the average number of deaths in the EU is likely to exceed the average number of births, as has already been the case in Germany since 1972.

4. The migration balance, which has increased strongly since the mid-1980s, is likely to stabilise at a fairly high level and to continue to make a larger contribution to population growth than the surplus of births currently still persisting on average in the EU.

5. Birth rates are likely to remain relatively high in Finland, France, Ireland, Sweden and the United Kingdom, while they are likely to remain lowest in Germany, Italy and Spain.

6. Life expectancy is likely to increase, but the rates of increase will fall. It is currently 80 for women from birth and 73.5 for men. In 2050, it is expected to be 87 for women and 83 for men.

7. The percentage of young people under 20 in the population as a whole is currently 24 %. This share has been declining since the mid-1970s, and is expected to decline further. In 2050, it is expected to be between 16 % (lowest variant) and 20 % (highest variant). Ireland is currently by far the 'youngest' country in the EU, with 34 % young people, while Germany and Italy are the 'oldest' Member States, with 21 %.

8. The population of working age (20 to 59), which has grown continuously to date, will decline for a long time as from 2005, the rate being dependent on the rate of net immigration from non-EU countries at that time. A reversal of this trend is not anticipated until 2035 at the earliest, and then only on condition that there is a structural recovery in the birth rate and that net immigration continues to remain relatively high.

9. Since 1950 the percentage of over-60s in the EU population has increased relatively steadily. It is anticipated that, starting with 21 % in 1996, this percentage will continue to increase, and will actually increase faster until at least 2020, when it will be around 27 %. In the highest variant, it could rise to 40 % by 2050. The increase in the rate will be most marked in what are currently the 'youngest' countries. Meanwhile it is anticipated that the EU countries with the highest proportions of old people in 2050 will be Italy and Spain, with rates of between 30 and 44 %.

10. The ageing of the potential workforce will either stagnate or even be reversed after 2015.

11. There is also likely to be a dramatic increase in the percentage of very old people, i.e. those aged over 80, when the baby boom generation is over 80, i.e. in around 2025. They are likely to constitute more than a third of the 'old' population.

According to comments by the Statistical Office of the EU, all this means that, as from the year

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(1) Eurostat (1997): *Population and social conditions*, Statistics in focus, No 7/97.

2005 and for the foreseeable future, there will be a further pronounced increase in the *overall deficit* in terms of the balance between 20 to 59-year-olds, in principle capable of gainful employment, and young people under 20 or older people aged 60 or above and people not capable of gainful employment, unless, structurally speaking, the figures for births and/or deaths are considerably higher than anticipated.

In view of the population trend in general, but also and in particular in view of the ageing process, pronounced shifts in consumer behaviour are likely to ensue within Europe: there is a comparatively greater demand from young people for 'innovative' products and services, and their consumption pattern changes more rapidly than that of older people. As a result, certain dynamics are released or checked. Thus alongside and in conjunction with vocational education and training, (higher) education and continuing training are becoming increasingly important categories in association with the development of new products and services, with which, *inter alia*, new needs are repeatedly generated, increasingly in the older generation also.

This trend applies in particular to Europe as a cultural and economic entity, which is characterised by a high level of education and training and can make itself felt in terms of raw materials, mineral resources and/or geographical proximity to other major markets to only a comparatively minor extent, and whose industry is heavily dependent on exports. Highly intelligent, innovative products and services can be developed only with highly qualified specialists. Mass products and products and services for everyday use are being produced by machinery and plant, with ever fewer people and with ever higher capital investment; owing to rapidly changing customer requirements and marketing and advertising strategies, this machinery and plant is being set up and operated ever closer to the consumer, i.e. in the more densely populated regions of the world themselves, in order to save transport costs and time, and to be able to adapt more rapidly to customer requirements there.

In future, the new information and communication technologies and media are likely to play a prominent part in the development of particular inclinations and in satisfying needs in respect of new types of information and entertainment, not only among young people but also among the population as a whole. Their direct use for (continuing) training purposes is still in its infancy, but in the next few years it could generate a new dynamic, in view of the accelerated dissemination and reduction in the cost of appropriate hard- and software, particularly given the population situation and its needs structure. Under these conditions, 'older' societies could then actually come off better than 'younger' ones. There are now indications that older people, too, are increasingly engaging with modern information and communication resources and taking advantage of opportunities offered by the Internet and multimedia, e.g. for personal shopping, banking transactions, to order books and newspapers/periodicals, etc. As access to the relevant technologies and media becomes more generalised and cheaper, the level of information and knowledge in the entire population is likely to improve enormously, naturally under the additional condition that the quality of the relevant products and services improves.

Against this background, the conditions required for a Europe of knowledge, teaching and learning look reasonably good, because as a rule older people, with their knowledge based on extensive experience, are good or very good teachers and can bring these things home to other people better than young people. However, society must focus on the older generation more and, in particular, on those of the older generation who have missed the opportunity for learning in initial training or for learning in continuing training, whatever the reasons (2).

In view of the long-term demographic trend, the population trend that will probably develop in this way is likely in future to have even stronger effects on participation in and the

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(2) Cf. also Cedefop (1998): *Training for a changing society. A report on current vocational education and training research in Europe* (author: Manfred Tessaring), Luxembourg, 294 pp. DE, FR and ES versions are being prepared. Hereafter, this report will be referred to as 'BFB 1'.

structure of education and vocational education and training than is already currently the case. Attention is likely to continue to shift from initial training in the context of general school education to the occupational and vocational training of young adults and older persons in employment, i.e. to vocational adult education and to general continuing training (3)*, with reference both to the population of working age and to the population as a whole.*

The capacity of a society to compete, to innovate and to adapt is fundamentally based on a balance in the age pyramid between those who are (capable of) working and those who are not working. Not only is the financing of social security and provision for old age dependent on this, but so too is the transfer of skills, knowledge and competences between generations, together with the renewal and further development of these, which are required at an ever more rapid rate. In the medium term, the foreseeable ageing of the population could have a detrimental effect on Europe's competitive position, unless there is stronger development of the access of older sections of the population to lifelong learning and teaching.

Against this background, it is not only the frequently cited structural change in technology and the world of work that necessitates lifelong learning, but also the demographic trend and increased life expectancy, which are confronting ever larger sections of the working population with the need to retrain and reorient themselves in the course of their working lives, and which require societal institutions to change and update their teaching, learning and training provision, including the forms this takes.

II. Trends in the participation of young people in education and training

The results of numerous studies in recent years of conditions at the point of the transition of young people into adult and working life, which have been carried out in the Member States and in the form of a comparison of several Member States and also at European level, as well as by the OECD from a wide range of viewpoints, can be summarised as follows:

1. The 'youth stage' has grown considerably longer in recent decades; as a rule, the establishment of a family and stabilisation in working life, which frequently occurred under the age of 20 in the past, do not now take place until the age of 25 or over, and this applies to both sexes. The reasons lie in the increased length of education and training and higher school attendance rates on the one hand and, on the other, in the fact that the occupations of their fathers or mothers no longer have the same dominating influence on young people's choice of occupation, and that it has become more difficult to choose and prepare for an occupation, which means that this takes longer. Hence they are financially dependent on their parents or on State welfare benefits over a lengthy period, or need to earn the necessary funds via jobs for schoolchildren and students or in the context of alternating forms of training.

2. Enterprises and authorities are appointing ever fewer young workers under 20 to jobs where the nature of the work organisation is making it ever more difficult to integrate younger workers, whether or not they have formal qualifications, and where they are seeking employees who can rapidly make an impact as 'functioning' and loyal workers. It is becoming ever harder to depute tutors and older specialists to introduce new employees to the work, owing to the pronounced increase in the labour intensity of their own individual jobs. In contrast, there has in the meantime been a huge increase in jobs for schoolchildren and students, which are not subject to social security contributions and where either side can give notice at any time.

3. The increased level of education alone cannot of itself ensure the access of young people to employment; on the one hand, local and regional employment opportunities are crucial and, on the other, the acquisition of additional qualifications, practice and, possibly, experience in other countries are becoming ever

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(3) Cf. European Commission, Eurostat, Cedefop (1998): *Key data on vocational training in the EU*, Luxembourg.

more important. The question of whether young people can obtain stable employment also depends on whether they are prepared to be mobile, in geographical and occupational terms, as well as on great adaptability and flexibility. However, these factors are promoted by a higher level of education.

4. Increasingly, completion of compulsory schooling alone or even completion of secondary stage II with no higher-level qualifications is not sufficient to ensure entry into working life; additional vocational training or higher education leading to qualifications and recognised on the labour market is becoming virtually essential in order to achieve entry to stable employment.

5. Despite the sustained increase in the participation of young people in education and training since the 1960s, depending on the Member State, 10 to 50 % of 20 to 24-year-olds still take no further part in education at the end of their compulsory schooling. This is the population most at risk of unemployment: in 1997, unemployment rates among young people in this age group who had left school with no qualifications were 25 % among young men and 27 % among young women. In comparison, in the case of graduates of institutions of higher education and similar establishments, 17 % of young men and 18 % of young women were unemployed. Some 40 % of the unemployed in this age group had had no further education on completing their compulsory schooling, or 46 % of unemployed young men and 34 % of unemployed young women (4).

Among 15 to 19-year-olds, in 1997 on average in the EU some 25 % were active on the labour market, i.e. actually in employment or actively seeking work. Only four Member States were 'out of line': in Denmark almost 70 % were active, either in employment (63.5 %) or seeking work (5.5 %), in the Netherlands 41.5 % and 7 % respectively, in the United Kingdom 42 % and 7 % respectively, and in Austria 37.5 % in employment and 4 % seeking work. In all other Member States with the exception of Germany (28 %), the employment rates in this age group were below 20 % (5). However, this fact does not necessarily signify a lower school attendance or training rate: in Denmark, the Netherlands and Austria, these rates are also among the highest, with around 80 % of the age group. The reason for this is that many young people in these countries are seeking employment alongside or in combination with training, e.g. in alternating/dual training systems, or working part time, etc (6).

In most Member States, the school attendance rate in this age group has risen by around 1 % a year in recent years. In the five years between 1992 and 1997, it rose by around 4 % in the EU, usually accompanied by a decrease in employment rates; exceptions: Denmark and the Netherlands, where it fell by 0.5 % a year.

These data, combined with the comments in the European Commission's latest report on employment, in 1998 (7), do not really enable firm conclusions to be drawn with respect to future trends and their consequences for policy and practice. It can be assumed, however, that for the reasons cited earlier the participation of this age group in education and training will continue to grow; the question of whether employment rates will decrease further at the same time must, however, remain open, since new forms of combined work and learning are beginning to emerge, a combination that is likely to be supported by new forms of work organisation and by a degree of increased flexibility in working hours. Denmark, the Netherlands and Austria are to the fore here, as is Germany, to a lesser extent.

With young people aged between 20 and 24, a different picture emerges:

In this age group, the rate of participation in the EU in (higher) education is just over 25 %.

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(4) Cf. European Commission (1998): *Employment in Europe*, Luxembourg.

(5) Op. cit.

(6) However, these figures for some countries with high proportions of young people in company-based, alternating or dual training, e.g. Denmark, Austria and Germany, reflect a statistical problem: Eurostat records these young people in alternating forms of training in both the employment and training statistics.

(7) Op. cit.

In 1997, some 26 % of young men and 28 % of young women were in full-time education or training. Around 50 % of those in this age group were in employment (m. 56 %; w. 46 %), 14 % were unemployed, and 5 % of men and 12 % of women, a total of 8.5 %, were neither in full-time education/training nor seeking jobs, i.e., in statistical terms, 'inactive' and occupied in the household or with child rearing.

The Member States in which the largest numbers of young men in this age group were 'inactive' are, as in the case of the younger age group discussed above, Greece, Spain, the Netherlands, Portugal, Sweden and the United Kingdom, in which 3.5 % or above were neither in full-time education/training nor in employment/registered as job seekers.

With regard to women, in 1997 the countries with the highest rates were Germany, with 13 % 'inactive', and Greece and the United Kingdom, with over 17 % 'inactive'. While in Germany and the United Kingdom the main reason for this was probably child rearing, or the lack of adequate child care for infants outside the family, in Greece early marriage is itself still, to a great extent, a customary alternative to employment.

Since the 1960s, there has in general been a considerable increase in the level of education and qualification of the younger generation. The difference in the level of education and qualification is particularly crucial in comparison with the older generation, those aged over 55 (cf. Section III) (8).

To summarise, the following conclusions can be drawn:

In the context of young people under 25, there is only a limited connection between high levels of education and qualifications and employment prospects, a connection which can certainly be confirmed in relation to all those in employment, as explained later in this document. In many countries, even if young people obtain qualifications at secondary stage II, whether they are formal qualifications of a general nature or qualifications of a technical/vocational nature, and in some countries even in the case of graduates, their employment prospects are no longer much better than those of young people who leave school early. In absolute figures, owing to increases in school attendance rates in the past, in most EU Member States they now make up the largest proportion of unemployed young people.

Owing to continuing qualifications deficits and the increasing demand for well-qualified workers in many fields of employment, as described in greater detail later in this document and also in Volume II, on no account does this mean, however, that it is no longer worth investing in continuing education. As we shall see, this is worthwhile in terms both of employment prospects and safeguarding jobs and of earnings levels and careers. The situation described above indicates, rather, major problems in highly-industrialised countries in the context of the future of paid work, working conditions and work organisation and, in particular, in the context of the entry of young people into adult and working life, in view of the uncertainties and orientation problems existing at a time of internationalisation, and of technological and economic change.

III. Levels of education and qualifications and employment rates (9) among older people

Similarly to the situation among young people under 25, the employment rate (10) among older people over 50, and particularly among the over-55s, is significantly lower in the EU than in the United States and Japan. These two factors are largely responsible for the fact that in both countries the employment rate is around 15 % higher than it is in the EU. In the middle age groups, the rates are virtually identical, although the employment rate among women varies a little more from country to country.

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(8) Cf. Cedefop (1998): BFB 1, p. 46 ff.

(9) These rates include all members of the workforce who are employed or self-employed or are seeking such employment, i.e. also those who are registered as unemployed.

(10) This rate includes all persons active in the labour market: employees, the self-employed, the unemployed, and young people in company-based or alternating training.

The relatively low participation of older people results from the early retirement programmes and improved options for taking early retirement in almost all EU countries. Since the 1980s, there has been an increase in the numbers of people leaving working life before the age of 65 (men) and (usually) 60 (women). However, these programmes and this increase appear to some extent to be coming to an end in the late 1990s, owing to the heavy burden on the public purse and on social security systems and pension funds, and the simultaneous increase in life expectancy.

The fall in the employment rate of over-55s has been particularly rapid: between 1990 and 1997 the average fall in the EU was 7 %, with figures of 11 % in Germany and 13 % in Sweden and Italy. Obviously the general employment situation and the threat of unemployment for older workers in particular frequently triggered these programmes and individuals' decisions to take advantage of them. For example, in the United Kingdom, where there was a reduction in unemployment over this period, the employment rate fell by only 6 %.

People persuaded themselves that the adoption of this policy by the State was contributing to a reduction in the alarmingly sustained increase in youth unemployment, to which the social partners were, for their part, also committed. However, enterprises usually saw this as an important precondition for the (accelerated) structural change they regarded as necessary: they regarded older employees as no longer sufficiently adaptable and flexible. Only later on did they become aware that they were frequently losing high levels of competence and, above all, the tacit knowledge of these specialists, which they then had to buy in from new or established consultancy and development companies, sometimes at greater expense than previously. Today the players are also aware that it is essential to maintain and develop this adaptability and flexibility in their own employees and, in particular, in older employees, by their own efforts in terms of in-house and intercompany training and continuing training (cf. also Section IV).

The influence of the level of education is equally apparent here: the higher the level of education, the higher the employment rate remains among older members of the labour force (11). The older such members are, the greater the differences tend to be in comparison with people who have not had further education. In the case of people with tertiary education at the level of institutions of higher education, employment rates throughout the EU were around 95 % among 50 to 54-year-olds, and 80 % for those without further education, while the figures for 55 to 59-year-olds were just over 80 % and 60 % respectively, and for 60 to 64-year-olds 45 % and 30 % respectively. The only exception is Greece, where, owing to the large number of small and medium-sized enterprises and small agricultural businesses, low-qualified older people probably need to continue working in many cases in order to earn a living, which means that their rate of employment remains relatively high.

Thus if the abovementioned policy of withdrawing early retirement options is to be successful, the problem of qualifications must also be tackled, i.e. older members of the labour force aged between 50 and 60 must also be given greater access to continuing vocational training and retraining. For most low-qualified people in this age group are not likely to retire completely voluntarily. Meanwhile, it makes sense to make it possible to take early retirement voluntarily between 60 and 65 without major sacrifices of pension entitlements. In this age group, the behaviour of those concerned becomes more similar again, irrespective of the level of education. A comparison of members of the population who only completed their compulsory schooling and those who completed secondary stage II strongly points to this: the employment rate is actually somewhat lower among the latter than the former, at just under 30 %.

To summarise, the following points should be stressed:

Qualifications and education levels are an important indicator of the capacity for employment until an advanced age; moreover, employers appear to prefer to send less well

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(11) Cf. Cedefop (1998): BFB 1, p. 42 ff.

qualified employees into early retirement or even to make them redundant, and to be less inclined to do this with more highly-qualified employees. One reason for this is likely to be that more highly-qualified people are more flexible and adaptable and (can) educate themselves further in good time and independently, and attempt to keep up to date with their subject. Incidentally, this behaviour is also confirmed by research into continuing training of employees in companies, e.g. Eurostat research from 1991 [12]. *More highly qualified people take advantage of training opportunities much more often than do the less highly qualified* [13]. *Of course the opportunities offered and the nature of their jobs are also likely to favour the participation of the more highly qualified; to date the work organisation and working conditions of the low-qualified have rarely permitted them to participate in training during working hours. However, it is precisely older workers over 50 for whom appropriate training options have yet to be developed, namely options that take account of their previous education and their vocational and life experience. There is an urgent need to develop new methods and teaching and learning processes for this target group, if there is a genuine wish to maintain their capacity for employment until the official retirement age, which is normally 65. Forms of part-time work for older people combined with continuing training and new alternating forms of combined work and study can be just as meaningful for these age groups as for young people aged between 15 and 25.*

IV. Women and vocational training

In recent decades, the dynamic of the labour market trend has not only been influenced by demographic developments, but has also been strongly characterised by the increase in female employment. This has been accompanied by an increase in their school attendance rate and a tendency for them to draw level with men in terms of participation in (higher) education and vocational training programmes.

While in many countries women now account for over half of those participating in further education options at secondary level (stage 2) and in higher education, and in the remaining countries there is a clear trend towards equal opportunities in these areas of education, to a great extent this still does not apply to continuing vocational training and technical and scientific higher education [14].

However, in some Member States there is still a discrepancy as regards the participation of the sexes in general (higher) education, for example in Germany, where in 1993/94 there were only 73 women for every 100 men in the tertiary or higher education sector. Similar discrepancies were also apparent in Greece, the Netherlands and Austria in the period under review. In contrast, the numbers of women participating in further education in Portugal, France and Sweden were disproportionately high.

In that period, the average figure in the EU for vocational training fields was only 93 women for every 100 men. Admittedly, the figures varied considerable from country to country: from 52 in Greece (where, it is true, vocational training is not very strongly developed) to 131 in the United Kingdom, the only country in which women account for more than half of those participating in vocational training. In courses of study in the tertiary sector, women are still predominantly found in the arts, humanities and medicine, while they continue to be underrepresented in technical, mathematical and scientific disciplines. They are found in equal numbers with men in social science, economics and law.

With regard to the participation of adult employees in continuing training, here women appear to participate more strongly than men, something for which various explanations have been put forward – they are disproportionately represented in occupations requiring or favouring continuing training – teaching, social services, health care, etc. However, it also likely to be connected to the fact that after

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(12) Cf. *Continuing vocational training survey in enterprises* (1994) and *Key data on vocational training* (1998), op. cit.

(13) Cf. Edgar Sauter in Cedefop (1998): *Agora II - the role of the company in life-long learning*, Luxembourg, p. 37 ff.

(14) Eurostat: *Population and social conditions. Statistics in focus*, No 4/97.

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the 'family stage', they (have to) take advantage of further training on their re-entry into working life, in order to prepare themselves for new or changed requirements (¹⁵). It is also possible that they are more enthusiastic about participating in continuing training because they enjoy contact and communication more than men do.

If one looks at the opportunities for women to advance to higher management positions, which in general correlate quite strongly with educational and vocational qualifications, it becomes clear that women still have only rather limited opportunities for advancement to higher levels, even though they are increasingly drawing level with men in terms of previous education. In order to have a chance of advancement to management levels, women still need to be rather better qualified than men if they want to be considered for the same position.

Meanwhile, there has been a general improvement in the opportunities for women on the labour market in the past two decades, particularly as there has been a great increase in jobs in the public and private service sector, where they are traditionally more strongly represented than in the primary and secondary sectors of the economy. It is to be expected – and there are already many indications of this – that women will soon draw level with men in employment terms, if there continue to be a decreasing number of jobs in industry and in view of women's greater occupational flexibility and their greater ability in respect of language and communication. In some countries their unemployment rates are already lower than those among men today (e.g. UK). In the age groups covering those aged 45 or over, unemployment rates are currently higher among men than women, although it is precisely in these age groups that women are much more strongly represented among those not in or actively seeking employment. This may indicate either that women in these age groups are less interested in paid employment or that they have been put off in view of tight labour market conditions.

There is still a much stronger demand from women than from men for part-time work, they are still more likely to be found in fixed-term employment relationships, and/or they may effectively be unavailable on the labour market, usually owing to child rearing. A particularly serious problem is still constituted by mothers bringing up children on their own and, though in far lower numbers, by fathers in the same position, who are unable either to take up full-time employment or to devote a great deal of time to continuing training.

Even though there are grounds for dissatisfaction about the labour market situation in general and the continuing and hardening high level of unemployment, it should be noted that the increase in the demand for employment on the part of women has been comparatively well absorbed in the past two decades.

The example of women and their increased motivation as regards employment and vocational training, as well as advancement in occupations or positions dominated by men plausibly suggests that the demand for education and training and consequently for employment is also, to a large extent, determined by the workers available and their qualifications: and this appears to apply in both quantitative and qualitative terms. This means that not only should the demand on the part of companies determine the content of education and training, and the career choices and orientation of young people, but their own suitability and preferences and the education and training available play a decisive part in the opening up of new employment opportunities! (¹⁶)

Female employment can be expected to stabilise and expand further, and women can be expected to continue to participate, at an increasing rate, in (higher) education and, in particular, also in vocational training, including technical and scientific tertiary education. In the medium term, they are likely to draw level with men in terms of the numbers in these

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(¹⁵) Eurostat (1998): *Labour force survey 1996*, Statistics in focus, No 5/98.

(¹⁶) Cedefop (1998): *Certificates, skills and job markets in Europe, a summary report on a comparative study conducted in Germany, Spain, France, Italy, The Netherlands and in the United Kingdom*, Luxembourg.

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areas, as they have already done in continuing education and other tertiary education.

Changes in the content and structure of vocational training provision and the increased integration that is under way in respect of general education and vocational training at all levels of continuing education will support trends of this kind. With the decrease in the importance of hard physical labour and in the wake of the growing customer and service orientation in the context of modern industrial production concepts, new occupational and activity profiles are likely to evolve and new training content and methods to ensue, which will also be more attractive to women. The number of occupations and fields of activity dominated by men is likely to continue to decrease.

V. Employment and vocational training of low-qualified people in the EU

Virtually all the experts are agreed on the subject of one trend, namely that in future there will be ever less demand for low-qualified people with an existing level of education below that of the skilled blue- or white-collar worker level. In virtually all the EU Member States, they constitute the group with the highest level of unemployment.

There are a large number of reasons for this trend, and they have already been comprehensively researched (¹⁷), and to a great extent confirmed by the trend in employment:

1. In almost all fields of employment, there are growing and increasingly complex demands, which favour people with sound vocational training and/or continuing education. In Germany, according to forecasts by the *Bundesanstalt für Arbeit* (Federal Labour Institute) and the *Bund-Länder-Kommission für Bildungsplanung* (Federation and *Land* committee for education planning) (¹⁸), the number of people active on the labour market who have not completed a course of vocational training is likely to dwindle to around 10 % by the year 2010.

2. In countries with high labour costs in particular, and especially in countries with high non-wage costs (taxes and social security contributions), industry is tending to rationalise and to invest more heavily in machinery and plant, at the expense of labour: jobs are becoming more capital-intensive, not only in the production sector but also in the service sector, to the detriment of intensive employment. When there is a low level of economic growth, the increase in productivity both in industrial manufacturing and in the service sector is accompanied by a reduction in jobs. In order to make profitable use of these investments, companies need ever fewer auxiliary staff but, instead, relatively speaking, more specialist and management staff; this results in an overall reduction in the number of jobs and, in particular, a considerable reduction in the number of basic jobs in industry and production.

3. In Europe and other highly developed regions, particularly high levels of general *and* vocational qualifications are demanded in the expanding service sector (¹⁹); job characteristics are shifting from technical and specialised skills to design, communication, social, language and client-oriented skills. The dissemination and reduction in cost of modern information and communications technologies also impose a need for different skills, if their potential is to be fully exploited. While jobs in the public sector are likely to decline further, there will be strong expansion in the private service sector, in terms of both marketable production-oriented services and personal services in the fields of education and health care or nursing and patient care (cf. also Section VII).

4. Finally, as a result of globalisation and increasing European and international integration, with opening up of the countries and markets of central and eastern Europe and east Asia, mass production of basic products and services is tending to shift out of the EU. Assembly line work and repetitive piecework in

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(¹⁷) Cf. the contributions by Hilary Steedman and by Lex Borghans and Andries de Grip in Volume II.

(¹⁸) Cf. Cedefop (1998): BFB 1, p. 109 ff.

(¹⁹) Cf. also Cedefop (1998): BFB 1, p. 58 ff. and p. 91 ff.

labour-intensive industries are frequently shifted to those countries both because of lower costs and owing to the high level of demand and promising markets there ([20]).

5. Against this background, in the EU Member States themselves there appears to be an ever closer connection between the productivity of an economic area and the level of unemployment among the low-qualified, or its tendency to increase. Here, the situation in Germany and France seems to be typical, as too does that in Finland and Sweden. Owing to high levels of taxation and social security contributions, which make labour costs comparatively high, enterprises prefer to invest in machinery and plant or to move their production facilities to non-EU countries. This combination of increased productivity and diminishing labour intensity cannot be expected to change unless in future tax systems reduce the burden they impose on labour costs ([21]).

This combination of reasons is creating a vicious circle, which urgently needs to be tackled by politicians.

Accordingly, the European Commission's 1993 White Paper ([22]), which has received considerable attention, recommends reducing non-wage costs for the low-qualified in particular, in addition to an active policy of working-time organisation, more flexible work organisation, and an improvement in qualifications. At the employment summit in Luxembourg in the second half of 1997, a range of measures were suggested to Member States, in order to combat, in particular, hardening long-term unemployment and the ominous youth unemployment still prevalent in many EU countries. The G7 countries recommended similar programmes in spring 1998.

At the same time, although the situation of declining employment prospects for the low-qualified is widely presented as a definite trend, looked at more closely, this is not quite so clear-cut: this fall in demand is likely to be only partially due to lean production and work organisation and to the range of jobs available to the low-qualified. Another factor is the effect of their replacement by more highly qualified employees, who are increasingly competing for the same jobs in the private sector, owing to the increase in their numbers and to poorer job prospects in general and, in particular, owing to the decline in public sector jobs, where in the past preference was given to employing highly-qualified people ([23]). In fact, many of the new services in the private sector are very simple ones, e.g. in logistics, tourism and the hotel and restaurant sector, in the entertainment industry, etc. Although they are comparatively badly paid, in a situation of declining employment prospects they are also attractive to the more highly-qualified, even if only temporarily in many cases.

Regions like the United States, which have a higher proportion of low-qualified persons than most European States, have a higher level of employment both among the low-qualified and, in general, accompanied by much lower productivity. There, however, earnings differentials between the more highly-qualified and the low-qualified are even greater than in Europe. This suggests that, as also confirmed by the study on the low-qualified already mentioned, technological advances and the implementation of work organisation in production, i.e. accelerated growth in productivity, have played a considerable part in the increase in unemployment in Europe among the low-qualified in particular and will, in all likelihood, continue to do so.

For reasons of social justice and competitiveness, there is an urgent need to reduce the level and extent of non-wage costs, which have been the subject of justifiable criticism in recent times, and to replace them by different systems of taxation, as experts have been

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([20]) On the issue of low-wage, low-cost and developing countries, cf. European Commission: European Economy, studies and reports No 3/97: *The European Union as a world trade partner, Annex VII: Low wage, low cost or developing countries? p. 251.*

([21]) Cf. also the debate on environmental taxes and CO_2 taxes with a simultaneous reduction in non-wage costs, which originally arose as a result of the Commission's 1993 White Paper, among others, and which has already resulted in concrete measures in some Member States in the interim, e.g. Denmark and, most recently, Germany.

([22]) European Commission (1993): *Growth, competitiveness, employment*, op. cit.

([23]) Cf. Borghans/de Grip in Volume II.

insisting for many years. This alone will not, however, resolve this structural problem, for there are simply not enough paid jobs in the traditional sense: there is an urgent need to develop new forms of work, new fields of employment and a new division of labour between employment in the public sector, the intermediate sector – i.e. permanently or temporarily sponsored by the public sector – and the private sector (cf. Sections XI and XII on information and communication technologies and environmental challenges).

Factors other than education and vocational training policy and labour market policy in the narrowest sense are also involved, such as taxation and contributions policy, which can support or impede the framework conditions for employment of the low-qualified. Meanwhile, the increase in jobs requiring higher qualifications in production-oriented services in particular (cf. Section VII) appears to be leading to a polarisation in wage and salary levels that is seen in the United States in particular but also, increasingly, in Europe (24).

At the same time, shortages of highly qualified people are manifesting themselves alongside oversupply, depending on sectoral and regional characteristics. Only if additional fields of employment are developed can the effects of replacement and polarisation be avoided in the relationship between low-qualified and highly qualified people.

It remains open to debate whether the issue of the difference in wage and salary levels of employees with varying qualifications itself plays a part (25). Some believe that the employment prospects of the low-qualified would improve with higher wage differentials, and that employers should therefore be given a greater incentive to employ the low-qualified via wage subsidies, as also supported by the White Paper mentioned earlier. It is precisely these (low-) wage groups that are barely above the poverty line, and a further drop in income would be unthinkable. In the United States and also in more and more European countries, we are encountering, above all, the 'working poor', i.e. people who are in full-time work but nevertheless are living below the poverty line: mothers raising children alone, people providing for large families, and foreign workers are particularly often to be found in this group. However, direct promotion of employment of the low-qualified can be meaningful only for a limited time; in the medium term, it even appears to be counterproductive and to impede their participation in the continuing education and training that is so necessary for this target group, and it also seems to put competitiveness and increased productivity of the economy at risk.

Modern production machinery and plant, flexible partially or fully automated machine tools, which can be automatically and ever more rapidly adjusted to new products and product variants via remote computers, are resulting in the ousting of industrial workers even in countries and regions which had previously remained attractive as an extended 'workbench'. Some of the conclusions reached by authors commissioned by the European Commission on the basis of analysis of economic research on the connection between globalisation, wages/salaries and unemployment, indicate that '... globalisation, in the form of increasing trade and investment with developing countries, is not the major determinant of the twin phenomena of rising wage inequality and rising unemployment observed on the two sides of the Atlantic. Technological change appears to be the main culprit.' (26) Meanwhile, it cannot be denied that jobs in labour-intensive sectors such as the textile/clothing, shoe and toy industries may be destroyed as a result of globalisation. Their prediction for the future is that '... increased competition from developing countries could represent a mounting challenge for unskilled workers in developed countries such as Europe. There are, however, solid theoretical and empirical indications that the challenge should be manageable.' ([27]) '... the fear that "maybe your wages were not set in Beijing yesterday or today, but tomorrow they may be"... this prediction ... is far from certain, provided low-skilled European and US workers continue to shift from import-competing manufacturing activity to the non-traded service sector...'. The article also stresses that '... among the roughly 12 % of total employment which is unskilled in traded activities, those competing directly with low-wage countries account for one third.' ([28])

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(24) Cf. Eurostat (1998), op. cit.

(25) Gerntke, Axel: *Zu den Aufgaben aktiver Arbeitsmarktpolitik und deren Rolle bei der (Re-)Integration von Geringqualifizierten in den Arbeitsmarkt* (The responsibilities of active labour market policy and its role in the (re-)integration into the labour market of the low-qualified), in: Friedrich Ebert Stiftung, Gesprächskreis Arbeit und Soziales (Discussion group on work and social affairs) No 78: Förderung der Beschäftigung von Geringqualifizierten in Deutschland vor dem Hintergrund der Erfahrungen in Frankreich, den Niederlanden und Schweden (Promoting the employment of the low-qualified in Germany against the background of the experiences in France, the Netherlands and Sweden), Bonn 1997.

(26) 'Globalisation, wages and unemployment' in: *European Economy*, pp. 114 op. cit.

It would be wrong to conclude from all that has been said that there will be a fall in demand for low-qualified workers across all sectors and fields of activity, at least in so far as there is still a large supply of basic jobs in a number of fields of activity and employment, which is why, *inter alia*, legal or illegal immigrant workers from non-EU countries have to date been comparatively well absorbed by the EU labour market. Admittedly, disregarding trends as regards the so-called 'grey' and 'black' labour markets, when jobs are in short supply, employment of this kind is also increasingly accepted by relatively well qualified and highly qualified nationals. Where the 'price' is largely the same, many employers also prefer the highly-qualified, in order to build up a stock, as it were. The workers most at risk and facing the greatest risk of unemployment continue to be ordinary industrial workers, and in particular male industrial or craft specialists in traditional fields: metal and wood processing, car and machinery manufacture, coal and steel or foundry workers, assembly workers and specialists in simple repairs, building workers, etc. This affects male workers in particular: unskilled and semi-skilled male workers appear to be less flexible and adaptable, comparatively speaking, than female unskilled and semi-skilled workers. For this reason, above-average numbers of older male workers in these categories in particular are unemployed.

This has consequences for vocational training in the field of industrial technology and for specialist and higher education in engineering and natural sciences in particular, which also need to be made more attractive to participants; they must also be even more effectively oriented towards what is required by the economy and by work organisation in terms of occupations and skills, something which is changing ever more rapidly, while taking into account not only specialist technical elements, but also social and communication skills ([29]).

The supply of trained industrial and craft workers has now diminished to such an unexpected extent that shortages are currently again occurring and demand is increasing (although this is an economic trend rather than a structural one) – this demand can only be partially met. This is why non-nationals, even from non-Member States, continue to have rather good employment prospects if they have the appropriate qualifications. Incidentally, this applies to an even greater extent to higher specialist and management staff, e.g. in the engineering sciences, such as mechanical engineering and information technology, electronics and electrical engineering in particular. Some people already see these gaps in qualifications as threatening Europe's status as a centre of industry. Thus there is no other option but both to expand the relevant (higher) education and vocational training provision in quantitative terms and also to improve its quality further.

To summarise, it can be confirmed that modern work organisation with high levels of productivity, flexibility and adaptability and a great capacity for innovation is now more dependent on highly qualified specialist and management staff in order to maintain and increase its competitiveness than was the case a few years ago ([30])*. Teamwork, flexible working hours, and flexible forms of work organisation need employees capable of thinking for themselves and structuring their own work, who continuously educate themselves and are in a position to increase and expand their potential for creativ-*

([27]) Op. cit.

([28]) See: Freeman, R.B. (1995): 'Are your wages set in Beijing?', in *Journal of Economic Perspectives*, 9/95; p. 30.

([29]) Cf. in Volume II the contributions by Heinz, Attwell/Brown, Leney et al., Konrad, Nieuwenhuis, Nyhan and Gruber et al. in particular.

([30]) Cf. Cedefop (1998): BFB 1, p. 53 ff.

ity (³¹). *Modern and efficient service and production concepts are inconceivable without employees who think and act for themselves. The blue- or white-collar worker performing repetitive piecework and characterised by a rigid division of labour is facing extinction.*

However, education and vocational training do not reach all those active on the labour market who have qualifications deficits. It remains necessary for jobs to be created in the low-pay sector for low-qualified job seekers, in new labour-intensive fields of production of goods and of service provision. Environmentally compatible and close-to-nature production methods in agriculture and skilled trades appear to be coming (back), as a form of preventive action to counter environmental damage (³²). *They are more labour intensive, but in some cases also more expensive than other highly industrialised methods of the kind that currently also characterise agriculture to a great extent and, increasingly, the labour-intensive construction industry.*

Meanwhile the mass unemployment in Europe in recent years, which has been comparatively well cushioned by society, is probably nothing compared with that which is developing in east Asia. Given the framework conditions in respect of demography and qualifications, Europe has a chance of overcoming the employment crisis in the near future. Other regions of the world may yet have to find a solution to their structural problems. They are only just beginning to recognise them, but it may still take years for them to overcome them in all respects.

VI. Employment trends and labour market development in the European economic and monetary union (³³)

In 1997, 60 % of all persons in the European Union aged between 15 and 64 were active on the labour market, i.e. 150 million people were either in paid employment or seeking paid employment; in 1974 the employment rate was still 65 % (³⁴). In comparison, in Japan and the USA the employment rate rose over the same period from 70 % and 65 % respectively to around 75 %. This low employment rate in the EU is linked to lower school attendance rates in the USA and Japan between the ages of 15 and 24 and higher employment rates among older people, i.e. those aged over 59, many of whom have been sent into early retirement in most EU countries in recent years. Within Europe, this rate varies from 48 % in Spain to 75 % in Denmark; this variation in particular correlates closely with the varying employment rates among women.

The net increase in new jobs in Europe between 1992 and 1996 was, for the most part, limited to part-time jobs. In 1997, 17 % of those active on the labour market were in part-time employment and 80 % of all those in part-time employment were women. There has also been an increase in the number of people in fixed-term employment, who accounted for 12 % of all employees in 1997, and as much as 34 % in Spain.

Meanwhile, the unemployment rate in the EU rose from under 3 % in 1974 to over 10 % in 1998, while in Japan it rose from 1.5 % to just under 4 %, and in the USA, after considerable fluctuations, it returned to below 6 %, as in 1974. Within the EU, the highest rates are found in Spain, with 18.2 %, and Italy, with 12.3 % (Eurostat: October 1998). Almost half of those unemployed have been unemployed for more than one year (49 %).

In 1997, 47 % of unemployed persons aged between 25 and 59 had a level of education below secondary stage II. Twenty-one per cent of all the unemployed in the Union were seeking their first employment, and in Italy the figure was as high as 50 %.

These last figures in particular indicate that young people are still encountering problems

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(³¹) Heidegger, Gerald and Felix Rauner (1997): *Reformbedarf in der beruflichen Bildung* (Need for reform in vocational training), expert opinion commissioned by the *Land* of North Rhine-Westphalia, Düsseldorf, p. 26 ff.

(³²) Cf. also Catherine Gay in Volume II.

(³³) Cf. in the context of this the more detailed comments in Cedefop (1998): BFB 1, p. 42 ff., p. 81 ff., p. 96 ff.

(³⁴) All data are taken from Eurostat labour force surveys (cf. Statistics in focus, No 5/1998, and the European Commission's report on employment in Europe 1997, op. cit.).

at the transition from initial training to employment.

With around 20 %, the unemployment rate among 15 to 24-year-olds is still twice a high as the rate for older workers. However, their labour market situation appears to be slowly improving. The relative fall in youth unemployment correlates, in particular, with the demographic trend and with higher attendance rates in continuing education and at training institutions. Unemployment is still around 3 % higher among women than among men, but during the most recent recession, between 1992 and 1996, their employment rate remained unchanged, while that of men fell.

In the Commission's opinion, if long-term unemployment is to be reduced, there is a need for more sustained and more pronounced expansion of employment, of which, however, there is still as yet no sign.

In recent years, it has become clear that in the EU and in the Member States that are strongest in economic terms, the increase in productivity, accompanied by growing capital intensity of jobs in the wake of automation and dissemination of new technologies and of increasing pressure from international competition, has been the principal reason for cutting jobs, particularly in the processing industries. This trend is likely to continue, and the best one can hope for is expansion of employment in the service sector (cf. the next section). Economic growth appears to be less and less associated with expansion of employment, even though there does still seem to be a connection; however, at least 2 % growth in gross national product in the EU is required in order for employment to remain stable. Only when growth amounts to over 2 % does an increase in employment begin to manifest itself.

The imminent enlargement of the EU to the east and the introduction of applicants for accession to the EU's internal market will also have consequences for employment policy. The increase in trade links is already having consequences for jobs in the EU, with winners and losers depending on the sector: for example, the mechanical engineering, automotive and chemical industries have been able to achieve a job surplus, while job losses, in some cases major ones, have been recorded in the wood, clothing, furniture, shoe and metal manufacturing industries. Thus the competitive situation on labour markets is likely to intensify, in the context of both the launch of economic and monetary union (the euro) and the integration of central and eastern European countries. Transitional provisions on freedom of movement for workers are likely to be only partially successful in neutralising the situation. Specific development of vocational training systems in central and eastern Europe and, in particular, in countries that are candidates for accession, could help to go some way towards alleviating this threat.

For these reasons also, social standards need to be equalised, initially within the EU, as provided for in the Treaty of Amsterdam (cf. the chapter on employment). Here, safeguarding of quality standards and of specific minimum qualifications for specialists at the various stages of education and training is likely to be an important framework category. Only by means of transparent definition of such standards within the EU can candidates for accession also adjust their education and training standards in good time and become competitive in the long term.

The guidelines recently adopted by the EU on employment policy, which aim, *inter alia*, to promote the employability of young people and the long-term unemployed, as well as the ability of those active on the labour market to adapt in line with structural change, and to improve the competitiveness of small and medium-sized enterprises, have so far led only to the first signs of binding and quantifiable action on the part of employment policy in the Member States. Meanwhile, there are indications that, with the right policy mix at macroeconomic level and in the context of labour market, vocational training and wage policy, the prospect of restoring the full employment of the 1960s is in the medium term not unrealistic. However, this is dependent on wide-ranging consensus among all the forces of society, including the social partners. In addition, monetary, fiscal and economic aims would have to be linked to wages, vocational training and labour market policy, and would have to be implemented in the form of an alliance for growth and employment (35), which should involve not only governments and the EU, but also the social partners.

It would appear to be particularly necessary to boost internal demand within the EU, specifically in view of the current situation, in which Japan and East Asia as well as Russia and parts of Latin America are facing major monetary and economic problems, regions that are some of the expanding export markets for European goods and services. In future, however, Europe and the USA will have to import more from these economic areas, in order to help them return to a state of economic and social, and ultimately also political stability. In particular, trade balances with and the standard of living of the population in countries adjoining the EU should be rapidly brought into line and levelled out, if social tensions as a result of legal or illegal migration are to be avoided.

However, if we wish to promote standards of qualifications of this kind, linked to the assurance of particular social standards, the urgent question arises of whether and to what extent wages and salaries and, in particular, pay increases could and should be more closely tied to the qualifications of the labour force than has been the case to date in most countries, and of how these qualifications can be measured and applied (36)*. This would strengthen the capacity of the economy and of society for innovation, while at the same time preserving and increasing competitiveness, which is already at a high level now. Last but not least, this would also give low-qualified and older employees an incentive to participate in continuing education on an ongoing basis.*

European Economic and Monetary Union is likely to be accompanied by an improvement in the prospects for growth, but not necessarily by an increase in employment. The quest for employment-intensive and sustainable growth in Europe and for an appropriate policy mix is still under way. In the view of decision-makers, in addition to an appropriate wages policy and a bolder investment policy, not on the look-out for subsidies, and accompanied by appropriate monetary and fiscal measures, this increasingly includes safeguarding and expansion of the level of qualifications of the working population. Its employability must be maintained and improved, in particular via comprehensive reform of (higher) education and training systems. The introduction of new technologies and the updating of knowledge must be progressed, employment systems must be modernised, and living and working conditions must be improved. According to Agenda 2000 (37)*, this also involves appropriate EU programmes and incentive measures, also including the countries of central and eastern Europe: the building up of trans-European networks, of research, education and training, the introduction of employment-intensive environment-friendly technologies and, in particular, measures to support the establishment and competitiveness of small and medium-sized enterprises.*

VII. Trend in occupations and employment in the service sector

The employment trend in the service sector has long been the subject of labour market research. Some results can be reported here. In contrast to Japan and the USA, the public service sector in the EU expanded markedly from the 1960s until well into the 1980s, while the expansion also seen in Europe in the field of private marketable and personal services lagged behind in comparative terms.

Estimates based on OECD statistics yielded the following overall employment percentages in the various segments in the 15 EU Member States in 1994 (38):

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(35) Friedrich Ebert Stiftung (1997): In *10 Jahren wieder Vollbeschäftigung in der EU* (A return to full employment in the EU within 10 years), Working Paper No 5, European Integration Working Party, Bonn.

(36) Naturally a concept of qualifications of this kind cannot be based solely on the acquisition of formal qualifications in schools and vocational training institutions, but must include, in particular, vocational experience and individual qualifications and skills actually acquired (cf. in this context the work of Cedefop and the results of its research on the accreditation and certification of non-formal qualifications).

(37) European Commission (1997), op. cit.

(38) European Commission (1998): *The contribution of business services to industrial performance - A common policy framework*, Communication from the Commission to the Council, COM(98) 534 final, p. 22.

Government services:	21.1 %
Wholesale and retail trade:	18.7 %
Business services:	8.5 %
Social and personal services:	7.1 %
Transport and communications:	5.9 %
Finance and insurance:	3.1 %
Services, total:	*64.4 %*
Manufacturing	22.7 %
Energy and construction	7.8 %
Agriculture:	5.1 %
Primary and secondary sectors, total:	*35.6 %*

Pressure on tightening State budgets and the simultaneous combating of inflation, factors which were given even greater priority during the introduction of European economic and monetary union, led to a reduction in the number of new appointments in most cases. In recent years the public sector and, in particular, publicly owned enterprises have declined, as a result of natural wastage, early retirements, and privatisations in the area of telecommunications services, rail, postal services, etc. In most Member States, employment terms in the public service have been made more flexible, and in some countries, such as the United Kingdom, Ireland and the Netherlands, the status of career public servants is restricted to a small group of staff with sovereign functions.

As a result of this trend, the attractiveness of jobs in the public service to well-trained applicants, to whom employment options in the private sector are also open, is coming under pressure. There is an urgent need to rethink the role and function of the public service, given the current challenges of Europeanisation and modernisation, and new responsibilities need to be worked out: what are truly sovereign functions; what are the social and democratic functions, what part must the public service play in stimulating competitiveness and assuring social equilibrium? Economic and social development in Europe and in the regions is highly dependent on its efficiency and on its ability to adapt to meet the challenges of social policy, while retaining its independence and ensuring continuity; at local and regional level, it must intervene more strongly in and stimulate the process of achieving a consensus between the economic and social players, and must act as a moderator in it: Have career public servants and other staff in the public service been adequately prepared for this in terms of qualifications and how they perceive themselves?

The current pressure on the public service, its greater flexibility and the increase in precarious, temporary and insecure jobs in this sector may put harmonious social and economic development at risk in the medium term. Equating modernisation with privatisation may not be enough, even though in many cases privatisation of parts of the public service and increased competition may be appropriate. Meanwhile, the services themselves appear to be in need of fundamental updating, and here the question of qualification and continuing training of specialists is crucially important.

Privatisation of former publicly owned enterprises and administrative fields and the quest for marketable services have been accompanied by slimming down of large private enterprises, the vertical range of whose production has been reduced; particular service departments have been thinned out or sourced out. This trend has been reinforced by the liberalisation, favoured by the EU, of previously protected market segments, such as air and rail transports and, in particular, telecommunications.

Job cuts in industry and/or service and industrial sectors previously operated as public enterprises are accompanied by the creation of new employment opportunities in private services. Production-oriented service enterprises such as repairs and maintenance, customer-oriented services, consultancy, research and development and elements of (continuing) training have clustered around the slimmed-down or privatised enterprises. New small and medium-sized enterprises have been set up with the aid of specialists and, in some cases, with the active support of major private and public enterprises. However, for precisely these reasons they remain largely dependent for a certain period or permanently, but with the advantage that their workforce has changed and become more highly qualified (39). In other words, their responsibilities and range of activities have been expanded and made more effective, which would not really have been possible if they had remained within large enterprises, owing to their lack of flexibility and adaptability.

Meanwhile, the question remains of whether, on balance, jobs have been created or lost as a result of outsourcing or privatisations. Have they simply been taken out of industry and introduced into the service sector? Are the privatised public enterprises really more efficient and are their services more customer-friendly, of better quality and, above all, more reasonably priced?

What is certain is that, above all, many low-qualified people previously employed in public enterprises and services and many basic jobs have come under great pressure as a result, and that the tendency is for there to be no room in the new privatised enterprises for the employees who have been 'released', who usually have few qualifications. Admittedly, most of the associated social problems have been cushioned by early retirement programmes, including those for career public servants. However, this has placed a major burden on public budgets, and owing to lack of funds, it is currently difficult to pursue an active employment policy. The employees who have been dismissed have added to the numbers of the long-term unemployed or have had to undergo retraining and further training in the context of employment offices, in order to update their qualifications or acquire new ones (40).

The so-called *revolving door effect* has arisen: instead of themselves investing in training and continuing training for their employees or giving them an opportunity to participate in continuing training in good time, enterprises have been dismissing them in order to recruit new and freshly qualified younger people or unemployed people who have been trained, in some cases with additional State incentives in the form of wage subsidies or job-creation measures. They felt compelled to do this for reasons of costs and competition, and State labour market policy has made this 'increased flexibility' easier for them at the expense of their employees.

This debate shows that the sharp distinction between the service sector and the manufacturing sector is becoming less marked for a number of reasons. Job characteristics and requirements in terms of qualifications are tending to converge, and the same goes for productivity levels in the two segments. Significant productivity gains, previously seen only in industry, are now also becoming apparent in the service sector on the back of computer applications, which are spreading rapidly, and the new and cheaper telecommunications options. Yet staff cuts are being made by large service enterprises too, first and foremost by banks and insurance companies, which can now ask their customers to carry out many simple tasks themselves. The job of cashier and many other front-office jobs have already become largely redundant, and the use by customers of cash machines, computer-assisted electronic banking facilities and postal banking is rendering many simple jobs in this field obsolete (41).

As mentioned earlier, a sustained increase in employment can be expected in the field of local and local-authority services. However, given the current situation, this increase is closely tied to public budgets, which are unlikely to increase in the foreseeable future. Thus any further increase in employment is dependent on the question of whether a partnership between public and private service providers can be successfully encouraged, and whether certain areas of social services and the health care sector, including services in the field of education and vocational training at schools and institutions of higher education can be made 'marketable', or whether responsibility for them can at least be spread across several bodies in a way that is advantageous in terms of costs. Are those who use these services, who may include companies in the case of education and vocational training, prepared to bear a share of the costs, or to become involved in providing the relevant services via their own input and efforts? (Cf. the debate on systems of levies to finance vocational training and, in particular, continuing training, as currently supported by the relevant Cedefop project).

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(39) Cf. Werner Dostal in Volume II.

(40) Cf. the contribution by Hartmut Seifert in Volume II.

(41) Cf. the research by Freiche, Janine et al. in the context of Ciretoq, list of publications in Annex 2.

Owing to the contraction in and greater efficiency of general public services and administrative services in general, and owing to the anticipated further reduction in jobs in the armed services, the frequently cited increase in jobs in the service sector is only likely to materialise if there is an increase in demand for and provision of private marketable services and, in particular, if they play a greater part in international trade. In contrast to the production of goods, the share of services in exports is currently still low in Europe in comparison with the USA and Japan; however, with the spread of global satellite communications (mobile telephones), the Internet and electronic commerce, its share is rapidly growing (42). The number of multinational enterprises and groups of companies is also increasing ever faster in the private service sector; with the falling cost of telecommunications and the spread of the Internet and electronic commerce, relatively small enterprises can also take a greater part in European and international trade in goods and services. Thus strong expansion can be expected here, but this is dependent, *inter alia*, on whether and to what extent the necessary qualifications are provided or additional skills developed.

Another sector that is expanding strongly and which is also marketable to some extent is that of personal services: care of the elderly and the sick, children and the disabled. These areas are in the process of expanding strongly, in the wake of the trend towards small families and in view of the increase in employment rates among women, as well as the increase in the number of single parents. Admittedly, in the field of personal services we find many employment relationships that are not formally numbered among paid jobs and frequently involve payment below the level of the cost of living; nor are these jobs covered by health insurance or social security law. These workers usually also claim State income support or unemployment benefit, or assistance from the relevant insurance companies. Framework conditions of this kind stand in the way of both professionalisation of the specialist workers active in this field and stabilisation of the relevant employment relationships, which must be seen as a precondition for this. In fact, the large numbers of precarious jobs are preventing those employed in this sector from being (re-)integrated into society and the economy in a way that is sustainable in the medium and long term, and are also preventing the relevant personal services from being subject to quality assurance.

Business services is another field that is expanding more rapidly, in particular as a result of the aforementioned drive by companies in terms of outsourcing and slimming down. These services include the following fields of activities, based on Eurostat (43) and NACE:

1. *Data processing*

☐ Hardware consultancy
☐ Software consultancy
☐ Data processing services
☐ Database activities

2. *Professional services*

☐ Legal activities
☐ Accounting and tax consultancy
☐ Management consulting

3. *Marketing*

☐ Market research
☐ Advertising

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(42) Meanwhile in the context of traditional postal and telecommunications services, in the wake of privatisation of public-sector enterprises, major job losses have been recorded within Europe, although this trend is likely to be reversed soon. Cf. European Commission (1997): *Panorama of EU industry*.

(43) Eurostat (1995): *Business services in Europe*, Luxembourg.

4. *Technical services*

- ☐ Architectural activities
- ☐ Engineering activities
- ☐ Technical testing and analysis

5. *Leasing and renting*

- ☐ Renting of transport and construction equipment
- ☐ Renting of office machinery including computers

6. *Labour recruitment*

- ☐ Labour recruitment and provision of personnel

7. *Operational services*

- ☐ Security activities
- ☐ Industrial cleaning

8. *Other services*

- ☐ Secretarial and translation activities
- ☐ Packaging activities
- ☐ Trade fairs and exhibitions

Broad areas of research and development, real estate services and holding companies could also be included in this system, and the same goes for repairs and maintenance, assembly work, logistics, etc.

The nature of the activities listed alone underlines the fact that, with only a few exceptions, such as security services and industrial cleaning, it is primarily qualified and highly qualified specialists who are likely to be active in these fields that can be classed as business services. This is also confirmed by the data on added value in this sector, the number of well-paid jobs, and the productivity level, which is comparable with that of manufacturing industry.

Employment in the private business services sector grew by 5.5 % a year between 1980 and 1994, representing stronger growth than in any other sector of the economy. Continued strong growth is anticipated in future, as a result of technological advances and the internationalisation of such services in particular, especially since, in comparison with the USA, Europe has a great deal of ground to make up. If anything, this trend is likely to become more pronounced (44). There is a particularly high level of demand for high qualifications in this sector; demand far exceeds supply.

To summarise, further to the European Commission's 1997 report on employment, and specifically the chapter on employment in the service sector (45), the following points can be confirmed:

The creation of new employment opportunities in this sector is very heterogeneous: some subsectors are expanding, while others are contracting. Recent years have seen substantial expansion of local and local-authority services in the fields of health care, social services and education, as well as in business services and environmental services. There has also been a degree of expansion in the hotel and restaurant sector and in leisure and recreational facilities, accompanying the increase in both tourism and business travel. In contrast, there has been little growth or even a reduction in certain other services such as transport and logistics or sales. The banking and insurance sector has been subject to significant contraction owing to the penetration of computers and the increasing use of the worldwide web and the Internet, and this trend will continue.

Against this background, the service sector is not automatically generating new employment prospects, as was assumed until recently. A specific policy continues to be necessary at all levels, to support sustained and at the same time effective or more vigorous growth in employment in this sector.

The urgent question is how personal services in particular can be made more efficient and more socially responsible in the context of, for example, public and private partnerships, and how they can be given a more professional

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(44) European Commission (1998): *The contribution of business services to industrial performance - A common policy framework*, Communication from the Commission to the Council, COM(1998) 534 final.

(45) European Commission (1997): *Employment in Europe*, Luxembourg.

character in order to assure their quality. Their effect on employment cannot be overestimated. New forms of solidarity committees and 'social enterprises' or novel local employment initiatives are coming into being. They should, if necessary, be assisted with start-up funding and political support similar to that already frequently provided in the environmental protection sector, at least in the start-up phase. Development of this kind can make an important contribution to improving living and working conditions, can make certain localities attractive and, finally, can also contribute to economic development and social cohesion in the region concerned. Education and vocational training are an important element of assuring quality and of increasing the productivity and social compatibility of the relevant services.

VIII. Levels of employment and education/qualifications: Is there a connection?

In the current situation, which is characterised by radical structural change, and in which employment of the low-qualified in particular is declining in Europe for a whole range of reasons, as mentioned earlier – new technologies and new work organisation or production concepts, international division of labour, orientation towards services, knowledge society, etc. – and demand from trade and industry and society is concentrated on sophisticated and higher levels of qualifications, there appears to be a connection between the level of employment and levels of education or qualification, a connection that has not previously been identified as clearly as this and in this form. For example, a recent Communication from the Commission to the Council states '... in all (EU) countries higher education attainment levels imply higher employment rates, for all age groups, and for both women and men' (46).

The differences between employment rates in the Member States become smaller if groups of persons with a higher level of education and the age group covering those in the prime of their working life, namely 25 to 54-year-olds, are considered. Here we find employment rates of over 80 %, with the exception of Spain. This connection is particularly clear in the case of women: an employment rate of 81.1 % among women with higher qualifications contrasts with a rate of only 48 % among low-qualified women (47).

However, the level of education per se is likely to play a smaller part, as otherwise Mediterranean countries such as Italy and Greece or Spain, whose rates of participation in higher education are among the highest, would also have the highest employment rates, which is not the case. It appears, rather, to depend on education options being relatively closely linked to economic and employment trends in the region concerned and to expanding sectors (cf. next section), on easy access to training and continuing training for young people and adults, and on schools and institutions of higher education meeting local needs. Nevertheless, it can in general be said that participation in employment is linked to a high level of qualifications, and this connection is currently becoming ever more apparent. However, employment opportunities are also likely to be dependent on the level of willingness to be mobile, in both occupational and geographical terms. Here again, there is a connection: an increased level of education and qualification is associated with an increased readiness to accept and greater potential for occupational and geographical mobility (48).

There has always been a relatively close connection between the establishment of vocational training and technical colleges or technical universities and schools of economics and regional development; they have tended to be set up in industrialised areas that had a clear need for more highly qualified workers. However, what is new today is that the development of particular regions needs to be specifically promoted via the establishment or expansion of institutions of education and training of this kind, so that these regions are not left behind, with young people and other target groups seeking educational and training opportunities elsewhere and the region losing ground which would be very hard to make up. Even more carefully targeted use of the European Structural Funds and, in particular, the Regional Development and Social Funds, can more effectively close the gaps in qualifications apparent at regional and local level. Here, however, the methods and instruments for anticipating and adapting the qualifications demanded are as yet inadequate (cf. also Section XV).

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(46) European Commission (1998): *Employment Rates Report 1998, Employment performance in the Member States*, COM(1998) 572 final, p. 15. (Cf. also Cedefop, Eurostat, DG XXII (1997): Key data, op. cit.

(47) Cf. European Commission, op. cit., and Cedefop (1998): BFB 1, p. 42 f.

(48) This statement applies in particular to mobility within the EU and less so to immigrants from non-Member States, who still include a large proportion of low-qualified people. Cf. also Cedefop (1998): *Mobility and migration of labour in the European Union and their specific implications for young people*, Luxembourg.

At macroeconomic level, the following overview is aimed at providing some indications of the most important current and anticipated trends in terms of the supply of and demand for specialist workers in the various fields.

Overview: *Trends in supply of and demand for low- or highly-qualified specialist workers in the various occupational and employment fields*

Key:

+++	rising demand in general, i.e. for both the highly and low qualified
++	rising demand for the highly qualified in particular
+	rising demand for the low qualified
+–	unchanged
–+	falling demand, but additional requirement for the highly qualified
–	falling demand in general
—	falling demand in general, but affecting the low qualified in particular

Trends in demand in individual sectors
and occupational fields (49)
(author's estimate)

1.	Agriculture	–+
2.	Forestry	+–
3.	Hunting and fishing	–
4.	Energy sector (coal, crude petroleum, nuclear power)	–
5.	Energy sector (water, gas, wind and solar power)	++
6.	Water sector (supply, purification, clean-up of watercourses and lakes, etc.)	+++
7.	Manufacture of basic metals (raw materials)	–+
8.	Extraction and quarrying of non-metallic minerals (construction materials, potash, peat, stone, earth, glass, etc.)	–+
9.	Pharmaceutical, petroleum and chemical industries	–+
10.	Manufacture of basic metals (semi-finished products)	–
11.	Manufacture of machinery and equipment	–+
12.	Manufacture of transport equipment (motor vehicles)	—
13.	Shipbuilding	–+
14.	Two-wheelers	–+
15.	Aircraft (50)	–+
16.	Computers and hardware	–+
17.	Electrical engineering/electronics	–+
18.	Light engineering, manufacture of optical instruments, watches and clocks, microsystems engineering	++
19.	Food, semi-luxury foods and tobacco	–+
20.	Textile manufacture and finishing	—
21.	Leather and textile products and apparel	–+
22.	Woodworking and wood processing	–+
23.	Wood and furniture industry	–+
24.	Paper manufacture and processing	–+
25.	Publishing and printing	–+
26.	Rubber and plastics industry	+–
27.	Jewellery, gold and silver products	+–
28.	Musical instruments	–+
29.	Photographic and film laboratories	+–
30.	Toys and sports goods	+–
31.	Construction industry (shells)	—
32.	Civil engineering	++
33.	Gas, water, heating installation	++
34.	Interior works (glaziers, painters and decorators, plasterers, etc.)	+–
35.	Joiners, parquet-floor layers, etc.	+–
36.	Tilers, floor layers, etc.	+–
37.	Wholesale and foreign trade	++

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(49) The NACE classification of economic activities in the EC is only partially suitable for this purpose and is not up to date. Despite this, we have mainly used this classification as a basis.

(50) A marked reduction in the production of military aircraft contrasts with a slight increase in production of civil aircraft. On balance, however, the trend is negative.

38.	Commission trade, commercial agencies	–+
39.	Retail trade	—
40.	Hotels and restaurants	+–
41.	Repair of consumer goods and vehicles	–+
42.	Local rail transport	+++
43.	Long-distance rail transport	–+
44.	Passenger transport (roads)	–
45.	Goods transport (roads)	–+
46.	Inland waterways transport	–+
47.	Coastal and ocean-going transport	–+
48.	Air transport (51)	—
49.	Dockers and waterway workers	–+
50.	Specialist workers for/at airfields and airport officials	++
51.	Travel agencies	–+
52.	Logistics and stores	–+
53.	Telecommunications	–+
54.	Banking, insurance and financial services	–+
55.	Real estate activities	++
56.	Renting of vehicles, machinery and plant	+++
57.	Renting of property and buildings	+++
58.	Public administration (central, regional and local)	–+
59.	Other local-authority departments, e.g. environmental protection, preservation of cultural heritage, local recreation areas, parks, etc.	+++
60.	Public safety and order (police, fire brigade, etc.)	++
61.	National defence	–+
62.	Social security, unemployment and health insurance, etc.	++
63.	Refuse collection, sewerage systems, recycling, hygiene facilities	+++
64.	Cleaning services	++
65.	Childcare	++
66.	Aid and care for the disabled and senior citizens	+++
67.	Other personal and household services	+++
68.	Education and vocational training including institutions of higher education and continuing training	++
69.	Research and development	++
70.	Health	–+
71.	Other services, welfare organisations, industrial and professional organisations	++
72.	Cultural and entertainment services (film, radio, television, concerts, theatre, museums, zoos, etc.)	+++
73.	Artistic and writing activities, artists	–+
74.	Libraries and archives, public collections, galleries	–+
75.	Sports organisations and professional sportsmen and -women	++
76.	Diplomatic services and international organisations	++

Number of occupational fields and fields of employment by number of mentions:

+++	9 mentions	26 expanding
++	17	
+	0	
+–	9	9 unchanged
–+	32	41 contracting fields
–	2	
—	7	

On this basis, the demand for specialist workers in the various fields of employment can be estimated as follows (52):

(a) Demand for low-qualified people can be expected in one of the fields, and a general decrease in demand is likely in only two fields.

(b) A general increase in the demand for specialist workers is likely in seven fields, and demand for highly qualified people in particular is likely in 17 fields.

(c) There is unchanged and unchanging demand in nine fields.

(d) According to these estimates, a reduction in demand is likely in 32 fields, but with an increase in the demand for highly qualified people.

(e) Demand in general, but in particular the demand for low-qualified people, is falling in seven fields.

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(51) In the process of privatisation of public-sector enterprises, air transport, like telecommunications, initially experiences a sharp drop in employment, but following a transitional period lasting a few years, both are likely to stabilise and require more specialist staff.

(52) This is a subjective estimate of the individual trends, based on the author's own research. The author would appreciate comments, and corrections if appropriate.

According to this, the nine fields that are 'growing' in general are: water supply and distribution, local transport, renting of vehicles, machinery and plant and of property and buildings, refuse collection, local authority departments, care for the disabled and senior citizens, other personal and household services, and cultural and entertainment services. Business services, which can be classified as expanding, cut across a number of the fields cited in the overview, as do information and communication technologies and environmental protection. Similarly, the 'multimedia' field cannot be clearly classified within this classification system. These are essentially 'transversal' fields of activity, like office or general administrative activities. Meanwhile, an increase in demand can be expected in these fields, with the exception of simple office and administrative activities.

The seven fields that are contracting are hunting and fishing, the traditional energy sector (coal, crude petroleum and nuclear power), manufacture of motor vehicles, textile manufacture and finishing, construction (shells), the retail trade and air transport. The construction industry and the retail trade employ large numbers of people, but many of them are likely to be threatened by rationalisation (53).

With 32 mentions, the most important situation is that in which demand is likely to decrease in quantitative terms, but increased demand for well-qualified people is quite likely.

The connection depicted between the level of education and qualifications on the one hand and the employment level on the other is likely to become ever closer in the course of the structural change that is taking place. However, it is likely to be less and less a case of preparing people specifically for certain jobs available in the short term by means of specific specialised and technical vocational training, as is predominantly the case in the Anglo-Saxon countries and Japan (54)*. Instead, it is likely to be a case of giving young people and adult participants a good starting capital involving a profile of skills that is as broad as possible, with which they can find, or if necessary create, prospective employment for themselves locally or further afield, or become self-employed or establish new small and medium-sized enterprises.*

IX. Closing gaps in qualifications!

There are serious signs of a growing split in labour markets into segments in which demand is high in respect of employment, with a growing and partially unsatisfied demand for high qualifications – as, for example, in business services, as mentioned, and in the field of multimedia and information technology, and segments with a decreasing demand, again accompanied by increasing requirements as regards qualifications, such as agriculture and the extractive (primary) sector. The current polarisation between highly and lower qualified persons, which appears to be hardening, is in stark contrast to the objective needs in terms of sustained, environmentally and socially-compatible economic and technological development, which is essentially being taken forward by highly qualified specialists.

This mismatch between supply of and demand for qualifications jeopardises the economic upturn currently underway in the EU and the dissemination of applications of new technologies at EU level (cf. the Section on information and communication technologies), and impedes the necessary structural socio-environmental change. It is a matter of particular concern that the polarisation and gulf between high and low qualifications, between jobs with good opportunities for ongoing formal or informal continuing training and those in which these opportunities are not available, owing to supply-side work organisation and structure, appear to be intensifying and widening, and that this trend is continuing.

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(53) Percentage of employees (1995) in the construction sector 6.5 %, and in the retail trade 13.9 %, i.e. overall almost 20 % of employees in the EU. To these should be added the self-employed, whose numbers are also very high in both sectors, owing to the small and medium-sized enterprise structures predominating in many countries.

(54) In cases where broad basic education and broad basic knowledge exist, this may be sufficient; this appears to be the case in Japan in particular, and increasingly also in the USA.

Education/training systems and, in particular, vocational training systems in the EU are facing a major challenge as regards bridging the existing gulf between demand for and supply of highly qualified specialist workers. Bridging of this gulf is closely associated with overcoming the current crisis in employment [55].

At the middle levels of qualifications in particular, for example at EU stages 3 and 4, i.e. at the level of engineers, highly qualified skilled workers, white-collar workers and administrators, greater gaps are opening up in most Member States. Education and vocational training provision is inadequate, in both qualitative and quantitative terms, and the structure of provision and the options available are not sufficient to enable participants to receive effective and appropriate training and continuing training. As a result, their development is impeded and the economy as a whole is insufficiently equipped to move into new competitive fields of products, services and employment.

Private vocational training and technical colleges are very successful at this level, but what they offer is not always adequate or up to date. Publicly-funded schools/colleges also need to be brought up to date and to expand their provision; controls and ongoing renewal of curricula can be achieved by setting clear quality standards in consultation with practitioners and professional associations. Their position in the context of formal education must be strengthened, but there is an urgent need for them to open up their provision to new target groups: adults and people transferring from other disciplines, foreign applicants and the unemployed, etc. Pupils and students at these vocational training and technical colleges should be given a stronger right to consultation in the context of structuring the (manner of) the provision, especially since as a rule they themselves have had practical experience and are producing an input in terms of knowledge and skills which are relevant to the training programmes and, under certain conditions, are able to play a supportive role in the actual teaching.

Since 1994, in addition to the part-time work mentioned earlier, the net increase in employment has related in particular to occupations involving a high level of training/qualifications: managers, highly qualified engineers, etc., have been sought after, while there has been less demand for the low-qualified. All the indications are that this trend is set to continue. Only in sales and in the hotel and restaurant sector has a net increase also been recorded in respect of the low-qualified and basic white-collar jobs.

The divide in the employment potential of the highly qualified and low qualified has widened further in manufacturing industry, while in the service sector its extent varies from one subsector to another. There are major differences depending on sector of industry and region: for example, in booming information and communication technology sectors, many jobs requiring high-level qualifications are created, but owing to the shortage of qualified specialists on the labour market, they are temporarily filled with people with other kinds of training or self-taught people, i.e. by relatively low-qualified employees [56]. It is questionable whether this trend for people to transfer from other disciplines will continue, however, since increasing stabilisation of a sector is accompanied by increased professionalisation of the specialists working in it, and sooner or later education and training systems adapt to this increased demand for professionalisation.

Meanwhile, sector-specific trends are increasingly converging in terms of their qualification-specific characteristics: for example, at EU level agriculture has become a very capital-intensive and technology-driven sector, in which high qualifications are also playing an increasingly important part; other examples are the leather and textile/clothing industries, the wood-processing industry and the construction industry (civil and structural engineering), which are also becoming ever more strongly industrialised and are losing their craft/manual character. The new technologies have also made their way into logistics and the transport sector, and are suppressing unqualified work. Whole occupations and groups of occupations are disappearing, such as dockers (replaced by modern automatic loading, unloading and warehouse facilities) and radio operators (replaced by satellite navigation and telecommunications systems); simple sailors are becoming ships' engineers, transport workers are disappearing, largely to be replaced by modern loading and unloading systems controlled by computer-assisted machinery. Warehousing is becoming redundant in some cases, as a result of logistics systems and modern just-in-time transport systems, etc. Machinery and plant operators and simple craft-based occupations will lose further ground as a result of technological change and innovations in work organisation.

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[55] Cf. European Commission/Eurostat (1997): Panorama of EU Industry 97, special feature: *The outlook for employment by sector*, p. 92, Luxembourg, with the concluding statement: 'The shift from low-skilled to high-skilled jobs needs an education and training system that effectively matches vocational education and training with the business sector's needs, to be able to balance demand and supply; to make this happen is Europe's big challenge'.

[56] Cf. Werner Dostal in Volume II.

Between 1995 and 1999, the following increases are anticipated: 10 % in total for highly qualified occupations (managers, senior officials, etc.), 10.1 % for other professionals, and 9.7 % for technicians. The increase anticipated for craft and specialist workers is 0.6 %, i.e. there will be virtually no change in their numbers. In the case of the occupations of clerks, plant and machinery operators and other elementary occupations, decreases of 1.8 %, 3.2 % and 2.1 % respectively are anticipated (57).

The number and range of employment-intensive sectors appear to be declining further, despite the exceptions cited in some areas of the service sector, in the retail and wholesale sectors, in environmental protection and in public services, in particular local-authority services; in this sense, it is virtually no longer a case of traditional or modern sectors, because all sectors are in the process of 'modernising', for reasons of cost and competition policy. In contrast to what would have been expected, many jobs have been lost in general communication services (postal services and telecommunications) in the past few years and since the beginning of the 1990s, with the exception of the narrower fields of information and communication services which can be categorised under business and market services (58). This trend can be expected to continue in the next few years, in the wake of the privatisation of public enterprises. Meanwhile, information and communication services associated with business and market services are set to continue to grow by an annual average of 2.8 % between 1998 and 2003 (59).

The information and communication society that is developing will not be sustainable in the long term without a high level of research and development, i.e. unless it becomes a 'knowledge society'. And this calls for a new dynamic in the development of occupations and qualifications, adjustment of existing profiles and facilitation of a new professionalisation, accompanied by a rise in the level of qualifications of the entire population. The occupation is a *social construct* (60). Accordingly, there is an urgent need, particularly at times of social change, to provide new job profiles in conjunction with the effective and desirable cultural, social and economic trend; to constantly update existing occupations and activities on the basis of analysis of work organisation and of labour market trends, taking account of Europe's democratically determined catalogue of values, and to adapt them in line with present and future challenges. Against this background, the *technical/specialist* aspect of an occupation becomes comparatively less important than other so-called extra-functional categories; these are linked to social and communicative, methodological and action-oriented skills. We shall discuss this in greater detail later on in this document (cf. Section XV).

Although short-term employment policy measures are required, they frequently have the disadvantage that they tend to delay the necessary investment in the raising of qualifications required in the long term, in systems of education, training and continuing training, and in forward-looking regional and sectoral economic and employment policy. In most European regions, a closer link has yet to be established between schools and local/regional development, between work and (continuing) training. This constitutes a major challenge for local and regional authorities and for framework policies at national and European level.

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(57) *Panorama of EU Industry*, op. cit., p. 92 (Table 5). Source: DRI Europe. Projection of Eurostat data.

(58) Op. cit., p. 85.

(59) Op. cit., p. 91.

(60) Cf. Walter R. Heinz in Volume II.

In order to create this link, there is a need to demonstrate great staying power and to renovate or open up the industrial and societal institutions involved in the relevant region. Public institutions and regional authorities must get together with private initiatives and businesses. New forms of public/private partnership are required, as for example promoted by the International Labour Organisation in Geneva. The development and continuous updating of qualification and retraining options for the working population are of particular relevance here. Public/private partnerships of this kind can increase the effectiveness of appropriate measures, costs can be spread, and their substantive organisation and objectives can be continuously adjusted. Experts from the social partners and their organisations could, in particular, be involved in this.

Small and medium-sized enterprises appear to have a particular problem in respect of their level of qualifications, and major gaps in qualifications arise here.

On the one hand they are subject to particular pressure to adapt and modernise, but on the other, they also have great potential for creating and expanding employment (61). As a result of the introduction of European economic and monetary union, all the indications are that small and medium-sized enterprises will come under even greater pressure, which they must meet by implementing a specific qualification strategy for their senior and junior specialists. Their ability to survive is largely dependent on this. Large and multinational companies can choose from large numbers of potential applicants, while small enterprises are more closely linked to local and regional labour markets and are likely to benefit little or not at all from the Europeanisation of markets. Strengthening the competitiveness of SMEs is directly connected with local and regional development, particularly in the case of geographically disadvantaged regions or obsolete industrial locations. Here some measures are still to be taken at both EU and Member State level, in order to reduce the gap between flourishing conurbations and backward regions. This is one of the most important tasks involved in ensuring economic and social cohesion in the Community in the long term (62).

Individual career and employment opportunities, including willingness to be more mobile in occupational and geographical terms, could be greatly improved by an increase in the level of education and training; job-sharing, e.g. between older and younger employees, or job rotation, have been shown to be a successful approach (cf. experiences in Denmark and other Scandinavian countries). A forward-looking employment policy with local and regional roots must be accompanied by corresponding expansion and adaptation of education and vocational training opportunities.

New forms of collective agreements or company agreements and, if necessary, new statutory regulations are likely to be required in order to facilitate permanent access to continuing training for members of the workforce throughout their working life (63). *In particular, the question already mentioned earlier arises in this context, namely that of whether it may be desirable to link wages and salaries to qualifications and skills actually acquired by employees.*

People with middle-level qualifications in particular are frequently highly motivated and creative, and are among those most likely to consider setting up a business; the creation and

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(61) Cf. the example of the Eindhoven region in the Netherlands and the contributions by John Konrad and Loek Nieuwenhuis in Volume II.

(62) Cf. European Commission: *Annual report on the Cohesion Fund (1997)*, COM/98/0543 final.

(63) Cf. also Seifert in Volume II.

survival of small and medium-sized enterprises are dependent on competence based on comprehensive occupational experience and good formal and informal qualifications. New forms of support, information, consultation and continuing training urgently need to be made available to these target groups, in order to support the evolutional dynamics at regional and sectoral level. But formal vocational training at this level also urgently needs to be made more attractive and more easily accessible. It must, however, be based on new occupational and training profiles (cf. Section XV).

The transparency and coherence of occupational and qualifications structures must be assured and continuously updated, in order for it to be possible to choose courses and occupations more precisely and to offer appropriate careers advice and guidance, to study, teach and learn in a targeted and results-oriented way and, finally, to make education and training provision and services more dynamic. And this should be a continuous process, with varying degrees of abstraction, at both regional and sectoral level and national and European level.

It should be a priority for education and labour market policy to raise the level of qualifications of young people at the point of transition from school to working life, and of adults in connection with work and employment. Here, the emphasis should be on creating system-based structures, rather than on short-term measures and special programmes. In addition to the involvement of legislators at all levels of political intervention, but especially at regional and sectoral level, there is a need for the social partners in particular to follow new paths and develop new options deviating from full-time employment, for example in the context of the stereotypical 35/40-hour week. Greater flexibility of work and employment in this sense can be highly satisfactory and 'profitable' from every point of view, both for companies in terms of competition policy and for individuals in the context of planning their careers and lives. Under these conditions, fresh potential for creativity and co-organisation can be released in employees.

If the continuing deficits in terms of qualifications are not eliminated and the relevant gaps in qualifications are not closed, i.e. if efforts are not made to combat the even stronger polarisation foreseeable between high and low levels of education and training, disadvantaged people of a new kind are likely to emerge, who will continue to be excluded both from the use of new technologies and from the associated work organisation, production and services, and general communication. In order that new employment opportunities can be opened up and good career prospects safeguarded, appropriate qualifications and skills for every man and every woman are becoming ever more essential.

Rural areas and peripheral or backward industrial regions and sectors of the economy in Europe should be given even more support than is currently the case in their endeavours as regards qualifications. As the examples of the Lorraine region in France and the Ruhr area in Germany have convincingly demonstrated, and as the textile and clothing industries have shown in the past, even regions and industries which appear to be incapable of surviving can be modernised by means of specific investment in human resources. In this context, intensive technology, environmental compatibility and proximity to the customer, combined with good service and comprehensive qualification of young people and requalification of the older working population are important parameters for the positive evolution or revitalisation of entire regions or sectors (cf. also Section XIII).

X. Earning power and qualifications

A high level of qualification is becoming ever more closely connected not only with employment opportunities in general, but also with (future) earning power.

Eurostat has investigated the distribution of earnings in the EU in general and, in particular, in relation to particular groups of occupations and qualifications in 11 EU Member States (64). The results of the survey carried out in 1995 (in the sample survey of employers, 1996 was the reference year for Austria and 1994 for France) are now available (65). The following results have been reported:

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(64) Cf. the Ciretoq research on sector-specific institutional links designed to promote vocational training and to establish new requirements in respect of training and qualifications.

1. *Earnings level*: Gross earnings are higher in northern Member States than in southern Member States. In the former, they are more evenly distributed in general. However, the United Kingdom is, like Spain, among the countries with the most unequal distribution of earnings between the lowest-paid and highest-paid occupational groups.

2. *Occupational position:* On average, managers and academics earn 30 % more than engineers and members of non-technical occupations of equal standing, and in Italy they earn over 50 % more. Office workers, clerks and sales staff earn roughly the same as blue-collar workers. However, in some cases the highest-paid members of low-paid occupational groups earn more than the worst-paid members of highly paid occupational groups. The earnings of the two lowest-paid occupational groups, office workers, clerks and sales staff on the one hand and blue-collar workers on the other, are roughly the same. In Italy, Germany and Luxembourg the average earnings of blue-collar workers are slightly higher than those of office workers, etc., and in the other countries they are slightly lower.

3. *Educational level:* Employees with a qualification from an institution of higher education earn considerably more than employees with a lower level of education. The difference is greatest in France and Italy, with 57 and 55 %, followed by Germany, with 50 %. In general, the difference is between 30 and 40 %. In contrast, the difference in earnings between employees who have completed secondary stage II and those with a lower level of education is smaller. The influence of the level of education on earning power increases significantly with age.

4. *Sectors of the economy:* In the two most important sectors of the economy, manufacturing industry and the service sector, there is no fundamental difference in average earnings. However, the service sector includes the branch with the highest earnings (banking and insurance) and also the branch with the lowest earnings (hotels and restaurants). Only in Germany (by 8 % in the old Federal *Länder* and 3 % in the new Federal *Länder*) and in Finland are earnings higher in industry than in the service sector; in Spain and the United Kingdom they are virtually the same, while in the remaining countries earnings are higher in the service sector.

5. *Age and length of service:* Earnings rise with age and length of service, but to differing extents in the various Member States: the length of service has a greater influence on the earnings level in the southern Member States than in the northern Member States (66).

Thus this survey shows clearly that from a financial point of view, it is worthwhile for employees to invest in further education or higher education. Postponement of early paid employment is offset by the higher earnings associated with a higher level of education. However, this comparatively close connection appears to be even more marked in the case of older people. Against this background, the connection between the level of education and qualification and that of earnings could, if necessary, be more strongly formalised, e.g. via appropriate collective agreements at company and intercompany level; in this way the acquisition and retention or extension of qualifications could be made more attractive and appropriately rewarded. Wage and salary increments could be more closely linked to the acquisition of additional qualifications, including those at a level below higher education (EU level 5) (cf. the discussion of middle-level qualifications above).

XI. The development of occupations and qualifications: En route to the information, communication and knowledge society

In recent years some things have become clearer with respect to the creation or destruction of jobs owing to increased use of new technologies and the associated increase in the capital intensity of jobs. Research has shown not only that a balance between the two can be achieved under certain conditions, but also that new jobs can actually be created. Thus new technologies and their use do not automatically destroy jobs, but also play a part in the creation of new employment opportunities. The problems are simply that those who become unemployed as a result of the use of these technologies are ill-equipped for the new jobs, that the latter do not arise in the same places or the same occupational fields, and as a rule they require different, often higher, qualifications than those typical of the jobs that have been lost. Thus the supply of and demand for qualifications are increasingly diverging, which means that a hard core of long-term unemployed remain, the great potential offered by the possible applications of the new technologies is not being fully exploited, and the associated growth in the economy and in employment is lagging behind what is actually possible.

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(65) Cf. Eurostat: *The distribution of earnings in the European Union*, Statistics in focus, Population and social conditions No 8/98.

(66) Points 1-5 are based on Eurostat's statistical surveys (1996), op. cit.

Sustained technological development that is socially responsible and takes account of environmental considerations actually creates many new jobs, mainly in new fields of production, services and activities, which under certain conditions may be very employment-intensive. While low-qualified workers have been and are being largely excluded from so-called high-tech industries in the metal, electrical and electronics industries and from information and communication technology, jobs have been generated for both the highly qualified and the low qualified in industries that conserve resources and are environmentally sustainable. These jobs arise in the vicinity of local or regional authorities and face little threat from globalisation. However, they are usually dependent on the public budgets of these local authorities or on special State programmes, which means that they do not necessarily lead to stable employment, since in the initial stage, at least, they are dependent on subsidies from the public purse that have to be renegotiated annually (67).

Environmentally responsible technologies that conserve resources, and their dissemination, are initially dependent on supportive fiscal and social systems. In the case of energy policy, a shift from highly capital-intensive atomic energy to decentralised systems of gas, wind or solar power can result in the creation of jobs, for either the highly or low qualified. In the initial phase, however, this change will result in an increase in costs, in connection with the extremely expensive process of decommissioning, with its problems of disposal. Thus a fundamental change of this kind, as currently planned in Germany, would be likely to lead to more jobs only in the longer term. It is as yet unclear whether they would tend to be suitable for highly qualified or low qualified people, and/or whether more employment-intensive forms of paid work would again emerge under these conditions (cf. also Section XII on environmental challenges).

The exponential dissemination of new technologies and the growing possibilities for the use of personal computers, systems of electronic communication and multimedia, the Internet, etc., have, in many areas, resulted in an increase in labour intensity (68) and productivity at the individual workstation that had been regarded as impossible. Additional, usually highly qualified, work was initially required, to programme the systems and to set up and manage networks. At first, there was still a demand for low qualified work associated with entering records from card indexes and traditional filing and archiving systems in the course of conversion. However, this phase has been completed in most sectors of industry and the economy and also in the public service in most countries.

Today new needs are emerging, but these are likely to be only of a temporary nature. In the course of conversion of currencies to the euro and the programming requirements in connection with the start of the year 2000, a large number of computer experts are required.

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(67) Cf. Catherine Gay in Volume II.

(68) Here, labour intensity is understood as meaning output per time unit, and should not be confused with employment intensity, which relates to the number of jobs involved in the production of particular products and services.

Thus as can easily be seen from job advertisements in the press, information technologists and computer experts need have no worries about jobs in the next few years. However, when this millennium task is completed, the situation is likely to change: people who are simply IT specialists are then likely to have fewer opportunities in the medium term, unless they also obtain qualifications in relation to particular applications in science, research or development, in banking and insurance or business services, etc. Here, in the course of the transition from the information society via the communication society to the knowledge society, new opportunities will also arise in the longer term for highly qualified specialists (69).

Cultural and knowledge-based production using multimedia, in the context of film, music, theatre, video and television, in the field of product design, graphic and industrial design, marketing and advertising, and communication sciences, has developed into a fast-growing area of computer use, but in addition to computer knowledge, other creative skills are also essential, in fields where the tasks are becoming increasingly specialised. The publishing industry is changing, as are journalism and mass communication media, and is becoming ever more strongly characterised by modern electronic information and communication systems.

On the one hand, mastery of a variety of applications and flexibility are required but, on the other, a high level of professionalism has to be developed and constantly growing requirements as to qualifications have to be satisfied. In this key area, which is important to the development and growth of the knowledge society, a strong tendency for the associated activities to be professionalised is likely to emerge soon, since there is an urgent need to improve productivity and the price/performance ratio. Here, Europeans are having to compete with major groups in the entertainment industry in the USA. In some fields, such as music, theatre, magazine and book production, they are already ahead; in film, video and television, however, they are still lagging behind. But here too, their position can be expected to improve. In terms of culture-based production, Europe will have particularly good prospects if it learns to service the American market and, even more so, the booming markets in Asia and Latin America. However, this can be achieved only if this field of culture- and knowledge-based production adopts a more professional and diversified approach.

An important area for computer experts is that of banking and financial services, public administration, and science and research. As has already been said elsewhere, here they are penetrating into areas that to date have been very employment-intensive; thus their input is likely to contribute to a further reduction in the jobs of low-qualified people in particular (70). Complicated mathematical calculations, complex classification systems, legal and administrative processes become more manageable and accessible; there is ever less need for auxiliary staff and administrative employees. Higher qualifications are required for the sale and production of or for giving advice on the relevant services, and owing to the new computer applications, little additional work by low-qualified workers is required.

Libraries and archives are being automated, books are ordered via the Internet, even the printing and production of documents are effected by highly paid experts in direct cooperation with private enterprises, without necessarily needing secretarial support. A large number of low-qualified auxiliary technical and office staff will become unemployed if present trends continue. These job losses are unlikely to be offset, unless those concerned obtain higher qualifications or retrain.

Nevertheless, many employees continue to be appointed to positions involving direct contact with customers and simpler advisory services, which are also being taken up more intensively owing to more rapid availability of information by electronic means, e.g. via the Internet. Telephone services and telesales are becoming more important, Internet enquiries have to be processed, the increasing electronic commerce also has to be processed, and so on.

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(69) On 30.10.98, the greatest demand throughout Europe was for computer-associated professionals (in the context of job offers at EEA level, reported by national employment offices to the EURES system and updated daily by the European Commission (DG V) and published on the Internet).

(70) Cf. the research by Freiche et al. in the context of Ciretoq, see list in Annex 2.

The qualifications required are shifting from the routine work which previously predominated to more complex services and advice provision. Workers have to be customer-oriented. Social and communication skills are called for on a previously unknown scale, in order to be able to provide these services, and include (foreign) language skills in particular, in addition to specialist skills (71).

Currently, the booming area of computer technology, hardware and software development and application, together with the increasing range of uses to which this is put by more and more users, offers great scope for people to transfer from other occupational fields and areas of activity (72). However, it is debatable whether this will continue. With the qualifications required becoming more generalised in the light of computer applications that are getting ever easier to use and understand, highly qualified people from other disciplines are grabbing parts of the labour market that were previously almost exclusively dominated by computer experts. Producers of knowledge and those responsible for innovation are no longer dependent on engineers. In the long term, the latter will not have sufficiently comprehensive or adequate qualifications for the employment opportunities they themselves have developed. Herr and Frau Müller, Monsieur or Madame Dupont, or Mr and Mrs Smith will be able to use computers, without the help of engineers or professionals, even if complex systems and ranges of activities are involved, e.g. in the context of architecture or statics as well as household and recreational equipment.

While the previous generation of machines largely made *manual workers* in industry redundant, with their know-how being replaced by flexible manufacturing systems and machines or robots, in the next generation highly qualified specialists, skilled workers, technicians and the majority of engineers, i.e. *brain-workers*, will see their qualifications replaced by computer applications and will be at risk of unemployment, unless they themselves are developing the new computer applications or are involved in disseminating and selling them. The knowledge society will make some of its own creators redundant, unless the latter succeed in constantly creating new knowledge or at least in processing knowledge in such a way that this knowledge itself in turn creates employment opportunities, namely opportunities to develop permanent production of knowledge or to be involved in its processing or dissemination.

Finally, according to research by J.J. Paul et al. in the context of Ciretoq (73), a degree of interweaving of profiles of technical and economic activities and requirements is likely to ensue, particularly in the information and communication technologies market, which is characterised by rapid product change: technical experts have to address marketing and sales issues and sales staff must acquire technical know-how; economics and technology move closer together. Only what the customer orders is now produced, in terms of technical specifications or characteristics, colour and design. Only what functions without technical problems and is attractively designed is now sold. Service is bought as part of the package. This results in new skills requirements on the part of both technical and sales staff.

The challenges associated with new technologies and their dissemination have little connection, however, with the problems of unemployment or the creation or destruction of jobs, to which a solution must essentially be found by means other than technology-based measures, namely by political, economic and socio-cultural means. In the medium term, the greatest challenges will ensue from the fact that the new applications have enormous effects on the internal work organisation of companies and authorities and on the organisation of their relations with one another, with corresponding implications for the supply of and demand for qualifications.

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(71) Cf. the contribution by Gruber et al. in Volume II.

(72) Cf. Dostal in Volume II.

(73) Cf. Brugia in Volume II.

In conclusion, the situation can be summarised as follows:

Dissemination of the new technologies and, in particular, the ICTs is still just beginning in Europe. Their potential is increasingly being recognised, but if they are to be fully exploited and disseminated, in terms of sustained economic and socially responsible or environmentally compatible use, a qualification offensive embracing all social strata is required. While hardware configurations and also most (standard) applications are likely to reach ever higher levels of perfection at even lower prices, the skills and qualifications of most users lag behind this potential. Such a comprehensive education, qualification and training offensive is required in order to take full advantage of these constantly multiplying possibilities on the one hand, but also, on the other, to guard against the risks associated with this reduction in costs and dissemination, to make people aware of the possibilities of manipulation, and to structure the associated socioeconomic change in an environmentally compatible and socially responsible manner.

Risks are, in particular, involved in the potential opportunities for manipulation and control on the part of manufacturers and major users with regard to consumers and users, employees and citizens, teachers and student, etc. If such risks are to be avoided and the possibilities are to be used for the benefit of all, there is a need for responsible consumers and employees and citizens who are involved in the process of the proliferation of applications and help to structure it. Comprehensive education and training is crucial, if this new potential is to be handled in a socially and economically responsible manner. New forms of polarisation and of marginalisation of whole sections of the population can be expected with all the attendant social ills, if education and training systems do not open their doors to this development and prepare as many people as possible for it: young people and adults, girls and boys, city and country dwellers, their own citizens and those of other countries, etc.

XII. Environmental challenges

Environmental challenges are very similar to technological ones: they cut across all areas of activities and occupations, affect everyone, and are increasingly causing people to rethink, change direction and relearn. The issue of the environment has achieved similar status in the political debate to the issues of technology, economics and society. It constitutes an equally significant challenge for the debate on education policy and, in particular, the debate on vocational training policy.

In the context of research by Cedefop in recent years on occupations and vocational training in environmental protection (74), it has become clear that in this connection, continuing vocational training and retraining of specialist and management staff is extremely important; it has become equally clear that initiatives will be successful only if they are closely geared to concrete needs or requirements at local level; so-called local employment initiatives have been launched by local-authority or independent bodies and citizens' initiatives, and have soon led to new permanent jobs. Despite initial scepticism, the elimination of environmental pollution on the one hand, but also, on the other, proactive prevention of pollution, resulting in conservation of natural resources such as air, water and soil and, in particular, also more economical use of energy reserves, have not put jobs at risk, but are making a substantial contribution to the creation of new jobs (75).

The dissemination and increasingly capital-intensive exploitation of technology and natural sciences in the form of flexible, fully automated manufacturing systems, nuclear power stations and large-scale industrial production techniques, in the field of foodstuffs production involving exploitation of water and soil as well as of reserves of raw materials, accompanied by mankind's growing needs in connection with travel, leisure time, transport and communication and in respect of everyday consumption, can go on increasing at the same rate and in its present form and scope only for a limited period. It is likely that certain restrictions will soon be imposed, and a battle for these resources is already developing here and there.

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(74) Cf. list of Cedefop publications.

(75) Cf. the contribution by Catherine Gay in Volume II.

Given this situation, vocational training specialists and planners are faced with a dilemma. They have to prepare young people for working with high technology, as well as making them capable of managing without it in some cases. In other words, they also have to preserve more or less traditional skills, so that their students and future generations do not completely unlearn the simple life and simple ways of working, e.g. manual craftwork, writing and calculating skills involving the head and hands, and not just machines.

Attempts are being made at this in organic farming, in wood processing and furniture making, and in the textile and clothing industries. Here and there, old crafts are again coming into their own, and demand for the relevant skills is on the increase again. To be a maker of musical instruments or a boat-builder is a respected occupation. These occupations are labour intensive and much less capital intensive than modern industrial jobs. But to some extent they too use processes that have become possible only with the aid of high technology, and they combine modern competences with traditional skills: new firing processes and glazing techniques are used in the ceramic industry and in pottery; new ceramic compounds and alloys developed for space travel are being used in industry. Cabinetmakers use numerically controlled machine tools and copy old techniques and models to manufacture new products in small series or even as single items, according to customer wishes.

In the metal industries and in electrical engineering and electronics, solar engineering, microsystems engineering and photovoltaics, high-tech and low-tech are combined, and new components and products are developed, while increased account is taken of energy-saving and environmentally friendly technological applications. New occupations are coming into being in these areas, e.g. solar engineer. Not only are the skilled trades and small enterprises devoting themselves to these issues, but so too, increasingly, are large industrial concerns. The increasing awareness of consumers, the concern of enterprises for their image and, above all, also the imposition of stricter conditions by Member States and the EU make an expansion of the relevant fields of employment likely.

Our intention is thus to emphasise that there need not necessarily be a contradiction between traditional, usually craft-based, skills on the one hand and environmentally sound working methods and modern technical processes on the other; in fact, it appears to be increasingly resolving itself, particularly when the politicians responsible for supporting large-scale industry or major projects, such as nuclear power plants or dams, realise that small-scale decentralised and local efforts can achieve just as much as, if not more than, major prestige projects: combined heat and power stations, utilisation of waste heat by large housing developments and industrial plant, biogas plant in agriculture, recycling of wastes in general and of wood waste in the wood-processing industry, burning of refuse in thermal-electric power stations, among others.

Meanwhile, all occupations are acquiring environmental elements: from the manufacturer to the processor and seller of foodstuffs, from the metal producer via the processor to mechanics and engineers, from construction workers to architects, etc.; no occupation is excluded, even if the environmental issue is particularly relevant to some occupations. These include, for example, waste management and disposal, recycling, energy management, and of course farmers, fishermen and forestry workers. The cleaning up of rivers and inshore waters, avoidance of air pollution and the generation and use of energy in a way that conserves resources have also created new occupations and call for new qualifications. Sewage treatment works and water treatment plants, geothermal, wind and solar energy plants are other examples involving a whole range of new requirements in terms of qualifications.

These fields of activities and input are creating many thousands of jobs, initially frequently subsidised by the State or the public purse, but increasingly also in the private sector ([76]). One thing is clear, namely that environmental protection and environmental engineering possess an enormous potential in terms of a new volume of work. Their development is assuring utilisation of corporate capacity via production of or trade in environmentally sound products, and is thus helping to ensure job security in more and more sectors and occupations.

However, formal systems of education and training are almost totally unequipped to meet this need. Only very recently have there been the first signs of discussions on changes to the relevant education and training, but for the most part they are still a very long way from being comprehensively put into practice. Here too, similarly to the case of the new information and communication technologies, people transferring from other occupations are finding a field of activities that is becoming ever more important and offers promising prospects for the future ([77]). In the long term, however, systematic vocational training in the context of initial training and higher education will be essential in these occupational fields also.

The situation can be summarised as follows.

The environmentally sustainable development of trade and industry, involving utilisation of state-of-the-art technology and conservation of natural resources, harbours great employment potential. This development needs to be supported by a comprehensive change in the content of education and training at all levels and stages, in the context of both appropriate initial training and labour-market-related continuing training. Energy and raw materials, air, water and land must be used in an environmentally responsible way and as sparingly as possible. This requires a comprehensive qualifications offensive in just the same way as was made clear earlier in the context of the use of new information and communication technologies. Both elements, high tech and low tech, must, however, be taken into account together and in relation to one another, and the relevant consequences must flow into new education and training content at all stages of training.

New occupational profiles and training requirements are emerging, and this is resulting in a change in existing forms or additions to older forms of vocational training. This restructuring affects all levels of education and qualification in more and more EU Member States, but in particular, in respect of labour-market-related continuing training in the context of local-authority and regional initiatives and measures based on public or private endeavours: the motto is 'Think global, act local'. Globalisation in this sense is overdue ([78]).

XIII. Occupational fields, sectors of the economy and their prospects with regard to educational and qualifications requirements, regional and sectoral trends

Increasingly, it is not enough to investigate the issue of the development of occupations and qualifications by cutting across the three major sectors of the economy, the primary, secondary and tertiary sectors. In the context of an international comparison in particular, levels of segments of occupations, fields of activities or subsectors must be considered in greater detail, and these do not always confirm the fairly general comments made above. In addition, needs in rural areas have different characteristics from the urban needs of conurbations, and needs on the periphery of Europe and in out-of-the-way major cities differ from those of geographically advantaged regions

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([76]) Admittedly, the net effect in the private sector still needs to be examined in more detail, particularly since the redesign and creation of jobs in environmental engineering and environmental protection frequently involve the transformation of traditional occupational and activity profiles. Cf. Loos, Roland: *Umweltberufe und Umweltqualifikationen* (Occupations and qualifications in the environmental sector), in: SWS-Rundschau, p. 482 ff., Vol. 4/1997.

([77]) Cf. W. Dostal in Volume II.

([78]) In a contribution to the American weekly Newsweek of 26.10.98, Pranay Gupte writes in his column entitled *A Jump Start For the Poor*: 'Colonialism was an early form of globalization: today's globalization needs to promote a fresh concept: empowerment of grass-roots institutions in the cause of social development. In the final analysis, all development is local.'

such as the Rhine area, northern Italy and the Paris basin, or the London area and southern England, or the Rhône valley.

Districts characterised by a single industry require different qualifications from major cities characterised by a full range of trade and commerce, and by services. Admittedly, living and working conditions are increasingly converging, as a result of improvements in the transport infrastructure and easier access to information and communication resources. However, the economic structure of rural areas is unlikely to come into line with that found in cities in the near future. Here, in addition to agriculture and the foodstuffs-processing industry, craft-based enterprises and self-employed and freelance workers can have a good income. Based on the new possibilities arising from teleworking and telecommunications in an environmentally compatible and socially responsible setting, they can also work increasingly effectively and creatively, without continuing to be dependent on city-based service provision, as in the past. A new balance between city and country appears to be emerging, at least in the vicinity of large conurbations, in a situation in which the quality of inner city life in large centres of population is deteriorating.

However, education and vocational training provision is continuing to be centred on cities, and rural areas risk remaining attractive only to the elderly and very old, unless local-authority services are improved in such areas (education, health, social aspects, cultural provision, etc.). New needs have arisen here, and there is a great demand for education and training, which is currently rarely met. The aim should be to achieve decentralised provision in smaller units, and elements of the concentration into large units, as implemented in conurbations in the past, should partly be reversed. And this applies in particular to scholastic and intercompany education and vocational training provision. Perhaps it will become easier to offer both decentralised and individualised provision in rural areas also, with an appropriate price/performance ratio, via new forms of teaching and learning supported by computers and modern communication systems such as multimedia and video-conferencing.

As yet there are still many differences between town and country in terms of occupational requirements. In the country, there is still wide-ranging demand for manual skills for the maintenance and repair of agricultural equipment, motor vehicles and household appliances, as well as for craft skills, etc., while in cities parts are simply now replaced, modern diagnostic methods involving complex measuring instruments and computers take over fault detection, and elements of the inspection and repair of vehicles are also handled by specialists using complex machinery. Warehousing and ordering of parts, the associated logistics and ordering and procurement in general, as well as dealing with sophisticated electronics, activities that are now part and parcel in service enterprises in cities, are frequently not yet the norm in rural areas (79).

However, a rapid convergence process between cities and rural areas is occurring, and this is also likely to bring the requirements in terms of occupations and qualifications closer together. Modern forms of communication and teleworking are also making it possible for well-qualified city dwellers to settle in the country again in growing numbers. Local authorities offer companies financial incentives and cheap land, etc. Good air and water quality, with simultaneous improvements in transport links, are making the country more attractive again.

Another clear-cut distinction that separated particular occupational segments from one another in the past is becoming blurred, namely that between commercial and technical occupations. Technical specialists increasingly have to address commercial issues, and people with commercial training increasingly have to familiarise themselves with technical matters. This is increasingly being reflected in the relevant training courses. The customer-oriented approach, the combining and increased coordination of production processes, marketing strategies, sales and service provision in the context of particular product ranges and the foreshortening or increased speed of communication between customers and manufacturers are all resulting in changes in the demands made on those working in the areas cited, accompanied by an increase in the requirement for identification with the product and growing demands for loyalty to corporate objectives.

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(79) Cf. Bieganski et al. 1997.

Every individual specialist is required to identify more strongly than in the past with corporate objectives. In-house education and training, and continuing training in particular, are acquiring a new, previously unknown, function. The relevant corporate culture is becoming crucial to a company's success in the medium and long term, and the task of integrating employees via education and continuing training is playing an increasingly important part in this (80).

In the case of technical specialists themselves, ongoing specialist continuing training is acquiring a key role, but they too increasingly need skills previously called for in commercial specialists, and less so in their case: social and language/communication skills, methodological skills, creative, design and planning ability, in the wake of the changes in, and hence speeding up, of production, autonomous implementation of repairs and retooling of installations on a teamwork basis, etc.

Meanwhile, an important aspect affecting technical specialists is the growing integration of metalworking and metal-processing skills and knowledge with electronic, electrical engineering, digital and information technology abilities and skills. The occupation of mechatronic, combining mechanical engineering experience and electronic skills, is penetrating into more and more fields of activities. Today, it already has a key place in manufacturing industry; soon this will also be the case in service enterprises geared to customer service, e.g. in vehicle repair shops; the car mechanic will be replaced by the car mechatronic.

Owing to the networking of the European automotive industry and increasing concentration of service enterprises, with their quality standards coming closer together, this occupation can soon be expected to make its mark in the service sector at European level. Experiments along these lines are in progress in connection with the EU vocational training programmes, Leonardo da Vinci.

In recent years there have also been rapid changes in occupational profiles in other fields of employment, such as the printing and publishing industries. Integration of the various production stages with the aid of computers, desktop publishing, copy setting and layout can be carried out by a few specialists, very small publishing houses are now viable, and editors can supply their texts for printing in accordance with particular standards direct by e-mail or via the Internet. In the context of film and television production, text, images and sound are integrated, with the three dimensions being combined via multimedia. A large number of new occupations have been created, but at the same time a large number of old ones have become obsolete.

Today *media occupations* are one of the occupational groups experiencing the highest level of expansion; this heading covers cultural and knowledge production as well as music, film and television/video production, etc., in the entertainment industry; (graphic) designers, adapters working with text, images and sound, journalists and copywriters of all kinds, directors and film producers, composers, advertising and PR specialists are some of the occupations most in demand. Their expansion is closely linked to the trend towards an information and communication society. Today most of these activities would be unthinkable without the computer. They use it as a tool and a means of communication, to make the creation and dissemination of their products more effective and faster. Digitalisation of text adaptation is following on from that of image and sound adaptation. Analogue systems of television, image and sound production and transmission are likely soon to be completely replaced by digital applications. Similarly, film and photo cameras are also being digitised and their images and films are processed by computers.

The only bottleneck preventing more rapid production and dissemination of digitally produced media consists of postal and telecommunications systems in Europe that are too sluggish, whose capacities are lagging far behind existing needs and demand, in the light of the exponential expansion of the Internet and other forms of electronic communication, and whose services are far too expensive (81). Here, State controls and incentives in the context of closer international cooperation are required, in order to prevent unchecked proliferation on the one hand and, on the other, to facilitate the widest possible use of new cable and radio communication services. The risk of creating private monopolies must be guarded against and competition controlled. Otherwise the State monopoly that once existed in the telecommunications field will be replaced by an international private cartel, which would largely escape public control.

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(80) Cf. B. Nyhan in Volume II.

Occupations connected with leisure activities, sport and tourism are also expanding as a result of the increase in the opportunities and requirements of the population. There is great demand for trainers and activity organisers, club managers and sports organisers, organisers of activities for young people and those seeking recreation, specialists in conference, health resort and spa tourism, and travel guides for long-distance, cultural and city trips and trips for young people and the elderly, etc. The hotel and restaurant sector has also expanded further in recent years.

However, the disadvantage of jobs in these fields often consists in the fact that they are highly seasonal, irregular working hours and shiftwork predominate, and pay is not very attractive, particularly in the hotel and restaurant sector. Also, preference is frequently given to employing younger people, and owing to the intensity of the work and the heavy workload, older people have little chance of remaining active in this field until the end of their working life. Thus there are fairly high levels of staff turnover in these jobs, little professionalisation and sense of an occupational identity have developed, and quality standards are not always assured.

Another sector in which vocational training provision largely fails to meet the needs of enterprises and their employees is the construction sector: civil engineering, development and structural engineering. The craft-oriented vocational training of the past is ever less adequate; industrial manufacturing methods, new environmental processes and applications, and new techniques are making slow headway in this sector, owing to significant qualifications deficits. Qualification of employees and changes in training to comply with new requirements in respect of quality and economic viability are lagging behind what is needed. New materials and computer-assisted design are facilitating new building forms and methods. To some extent their dissemination and low-cost implementation are being impeded by the lack of investment in vocational training and, in particular, continuing training of specialists and middle management. Bottlenecks and defective manufacturing quality tend to be the norm rather than the exception. No doubt this is partly due to the sector's dependence on the economic situation and the weather, but it is also due to the fact that initial vocational training and continuing training continue to manifest major qualitative and quantitative deficits.

There is a great need for vocational training and continuing training of specialists in these fields of employment, which is currently seldom met. Despite major investments from the public purse and by the relevant associations or private sponsors, the results usually lag far behind what is required, in both quantitative and qualitative terms. Here, closer European cooperation and coordination could make a worthwhile contribution to assuring quality standards and improving employment prospects for those working in this area.

The debate on European standards, training and occupational profiles, training content and objectives is falling on fertile ground in this sector; this could help to reduce the distortions of competition caused by varying social standards and to assure appropriate quality for consumers. There is an urgent need for the organisations of the social partners and State bodies to get together to establish or update such minimum standards in this field, which is important to economic and social development. In the case of major projects, European-level tender procedures have already been introduced, and the qualifications of specialists are an important element in these. This could serve as a stepping-stone to induce associations to upgrade their qualifications and occupational profiles, to agree on new manufacturing methods, low-cost building methods and environmentally compatible standards, and to assure comparable social standards, in the context of increasing integration of European labour markets. In particular, recognition and transparency of qualifications in this sector must be a priority at European level.

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(81) Here, Europe appears to be hopelessly behind the USA, cf. Quéau, Philippe: *Die USA überholen den Weltmarkt der elektronischen Kommunikation, auf der Überholspur der Datenautobahn* (The USA is overtaking the world electronic communications market, in the fast lane of the information highway), in Le Monde Diplomatique No 5759 of 12 February 1999, p. 2 of German version; Bodo Schulze for TAZ-Verlag – the author is head of Unesco's Information and Data-Processing Department in Paris.

Another fast expanding sector is that of logistics and transport infrastructure. Local public transport, long-distance rail transport, the waterways, as well as air transport, must be further modernised and urgently developed in Europe. Road transport is reaching the limits of its development, and individual transport must be redirected to new and attractive forms of public transport. New fields of activities and employment are emerging here in the context of town and transport planning and the construction of transport routes and means of transport. Here, developments that conserve resources and energy-saving play a major part. The EU has put appropriate incentives in place with the programme of promotion of trans-European networks.

Both passenger and goods transport must be moved from road to rail, waterways must be further developed to facilitate transport of raw materials and bulk goods, and the transport of gas, water, power and heat must be implemented more effectively via appropriately improved mains systems. Cable and satellite systems for telecommunications must be provided and further developed and their capacities increased (see above), and the necessary qualifications must be urgently provided. Supply and disposal systems for water and wastewater must be updated, and sewage treatment plants must be built or renovated in an environmentally sustainable and cost-effective manner. Disposal and recycling of waste and obsolete consumer goods are a field of employment with a promising future, which requires major efforts in respect of qualification.

As these examples and those mentioned in earlier sections demonstrate, there are many fields of employment in which there is a lot of ground to make up, a need which it is currently almost impossible to satisfy, partly because of major qualifications deficits, in both quantitative and qualitative terms. There is an urgent need to eliminate these deficits via a comprehensive qualification offensive on the part of State and private bodies. Meanwhile the public sector, i.e. schools and training institutions for which the State is responsible, is not in a position in either financial, organisational or educational terms to make efforts of this kind alone and without the participation of players in the relevant sectors and professional bodies. At the same time, the institutional framework conditions for such participation are still unsatisfactory in most Member States. Legal foundations and agreements between employer and employee bodies urgently need to be created or extended, so that the continuously required adaptation of supply structures in education and vocational training to meet these challenges can succeed at sectoral and occupational-group level.

Funding mechanisms for the development and provision of vocational training on the one hand and, on the other, the collectively agreed conditions for employee participation, possibly during working hours, need to be improved, or have actually yet to be created. In most EU countries, the construction industry has a contribution-based fund that finances vocational training provision and participants. Funds of this kind or foundations should be established at national level and, if appropriate, at regional level, e.g. as part of the public/private partnerships mentioned earlier, with the involvement of the social partners and their organisations, for all sectors if possible and for occupational groups below higher education level. Only in this way is it likely to be possible to eliminate the deficits mentioned on a permanent basis and to cope with ongoing adap-

tation of qualifications provision in line with ever more rapidly changing technologies and social and work-organisation conditions.

XIV. Changing work organisation and working conditions; effects on qualifications and skills (82)

Modern work organisation in industry and the service sector involves the performance of routine work by machines, robots and flexible manufacturing systems or by modern information, data processing and communications systems. In this way, in highly-industrialised countries both the labour intensity and the capital intensity of every job have increased to an extent previously considered impossible, accompanied by massive productivity gains and declining employment intensity. Prime examples are the automotive industry and its ancillary suppliers, and banking and insurance/financial services. At the same time, the production and service range has become much wider and more sophisticated; the key for both corporate organisation and employees is *flexible specialisation*, based on which very specific customer requirements can be complied with by the shortest route and in the shortest time. Today the customer can deal with banking matters, order a car and make cashless payments from his living room. He can order goods from a trader or direct from a factory via computer, e-mail or the Internet, and they are delivered to his door carriage paid. Intermediate trade, the wholesale trade and warehousing are becoming redundant in the same way as some elements of the retail sector.

This modernisation of production and services entails major job losses. Today, profitability and added value appear to be ever less dependent on job numbers and ever more dependent on increased technology and capital intensity. However, the immense potential offered by technology can be fully exploited only by highly qualified specialists and managers, which means that prior education and continuing training of employees have acquired unprecedented importance. Formerly, in the context of Taylorised performance of routine work based on assembly lines, good training was rarely necessary; all that was required was a brief introduction, an ability to learn quickly and work fast and an uncritical attitude, in order to be able to put up with often poor working conditions, but this has now fundamentally changed (83). The individual employee now has a high degree of autonomy (84), and the employer demands high levels of loyalty, adaptability and flexibility in relation to corporate and production objectives that are changing ever more rapidly. Both sides are subject to increasing pressure of competition and have to help to develop, manufacture or provide new products and product variants or services ever faster and more efficiently. Hierarchies are becoming flatter, and in the context of the relevant hierarchies, teamwork, i.e. research, development and consultancy, is gaining in importance at the expense of line management.

To keep production going, i.e. round the clock if possible, in addition to a fairly small number of supervisory staff, only teams of repair and service workers are now required, and they in turn are increasingly provided by plants' suppliers. Machines and servicing are purchased or leased as a package. The guarantee covering loss of production caused by their plant is assumed by the firms responsible for servicing.

The areas upstream and downstream of production are becoming of greater import: upstream, research and development, design and construct creation, planning and conception, purchasing and ordering; education and training; downstream, marketing, public relations, advertising, customer care, service, supply and packaging are becoming increasingly important, and this is where new jobs are created, while ever fewer members of the manufacturing enterprise's own workforce still work on actual production (cf. Section VII on business services).

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(82) Cf. Cedefop (1995): *The role of the company in generating skills: the learning effects of work organisation*, synthesis report by Méhaut, Philippe and Delcourt, Jacques, Luxembourg.

(83) Cf. Heinz, Walter R. in Volume II.

(84) Cf. Cedefop (1998): RR1, op. cit.

However, these upstream and downstream areas are also candidates for outsourcing, in connection with lean production. Companies establish themselves in the vicinity of large manufacturing plants so that they can offer these fields of activities; however, their working conditions, pay rates, job security and working hours are usually poorer than those of major companies in which trade unions and works councils are powerful, collective agreements are monitored better and the workforce often shows greater solidarity than is the case in up-and-coming young companies. On the other hand, in the latter the work itself is frequently less alienating and more interesting, because it is more varied and demanding. Employees can advance more quickly to high levels of responsibility and higher rates of pay. In such companies young people, too, can quickly acquire a relatively high level of responsibility and earn a lot of money. However, they must be prepared to work overtime, including weekends if necessary, to continue their training and to adapt and give up their holidays from time to time.

These new jobs in the fields upstream and downstream of actual production or services and in the small- and medium-sized enterprises in the vicinity of major companies are normally more qualification-intensive. With virtually no routine jobs, flexibility and a high level of willingness to adapt, including regular continuing training, are called for; those who are unable to keep up are dismissed or have to take early retirement. This is broadly how things have developed in recent years.

It is difficult to predict whether, and to what extent, this trend will continue, since the policy of tax relief for labour is beginning to show results, and corporate policy is itself changing in a situation in which unit labour costs are of virtually no consequence and profits are no longer linked to the number of hours worked to any great extent. There are increasing indications that employees are again being tied more closely to companies, so that they can be deployed appropriately in the context of the adjustment and updating of production that are required at an increasing rate, and so that the company retains the qualifications acquired by employees via informal processes, their knowledge based on experience, and their loyalty (85). Knowledge acquired in the company by service providers from outside does not simply benefit the client company, but is also offered to other companies to the same extent, resulting in problems in the context of competition for the client company itself.

In the light of the new production concepts, a new personnel policy appears to be looming, in a situation in which the regular purchasing or leasing of production-oriented services in the abovementioned upstream and downstream fields costs more in the long term than paying salaries/wages to the companies' own white- and blue-collar workers. In this connection, companies' own efforts in terms of (continuing) education are gaining in importance, including strategic importance, in relation to ensuring their success and survival in an increasingly competitive environment on world market. However, it has not yet really been possible for a clear continuing-education strategy, fully integrated into the company, to develop; experiments are still being carried out and mistakes have first to be made before the right solutions are found (86).

In this connection, the question of qualifications, including their evaluation, validation and accreditation, again arises: companies are increasingly establishing themselves in regions with a good or very good education and vocational training infrastructure. Cooperation between educational establishments and local trade and industry, between schools and industry, and between training establishments and employees, including trade unions, is acquiring a new dimension. Both sides are becoming aware of their mutual dependence. This can develop into new links between working and learning over an entire working life. Companies are becoming sponsors and are seconding teachers and trainers to local educational and vocational training establishments; they are funding chairs at universities and sponsoring research and development at institutions of higher education.

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(85) Cf. the findings in the context of research on *Tacit knowledge, learning by experience, in Atwell et al. in Volume II.*

(86) Cf. in particular the contribution by B. Nyhan in Volume II.

Industry-oriented test and accreditation centres in support of the selection of appropriate specialists are being set up with or without support from State bodies. Specific continuing training of participants themselves, which also benefits and takes into account their own individual projects, is beginning to *prove worthwhile*, and is also increasingly *rewarded* by improved earning and career prospects.

For the most part, these scenarios are still pie in the sky, but serious consideration is being given to such scenarios in progressive European companies. Some pilot projects are in progress, and are likely to be launched in a number of companies in the near future, and to be binding on all parties.

The position can be summarised as follows.

The increasing autonomy of employees in the wake of modernisation of work organisation, decentralisation of decision-making, increasing demands on every individual for loyalty, and the associated individualisation all necessitate a new medium that will create and preserve cohesion: this medium is qualification and development of skills, in-house continuing training and staff development, combined learning and working, whether at company or intercompany level, in cooperation with local educational establishments or institutions of higher education. The levels of qualification and competence of the workforce in general, also and precisely in terms of a collective, to use a term which has unfortunately been discredited, will increasingly become the focus of attention, if the survival of the enterprise is to be assured. Development and ongoing adaptation of them in line with changing challenges will be crucial to the competitiveness of enterprises, whether they are large or small, export-oriented or not, or whether they are operating in the primary, secondary or tertiary sector. In the course of this modernisation, a degree of responsibility not previously seen in this form will fall on individual employees. This is the real change in the paradigm that has been brought about by structural change. However, many people have so far failed to grasp this, people on both sides of industry, i.e. employer and employee associations and trade unions.

XV. Occupational and training profiles with a promising future

Against the background of the current trends and the development already described in the requirements in respect of occupations and qualifications, the question arises not only of their general characteristics, such as technical/specialist requirements, categories of knowledge, social skills, language/communication skills and methodological competence, but also of whether there are adequate methodological and institutional tools and instruments to assure the continuous updating and renewal of occupational and training profiles in very concrete terms, or whether completely new approaches need to be adopted. Such instruments certainly exist in most Member States, but they often lack transparency or are formalised in a way that makes it unlikely that they are adequate to meet the requirements of today. Do they need to be improved, what functions should they fulfil, and how can the results of research, studies and consultancy from the relevant institutions be more rapidly and efficiently integrated into policy and practice in the Member States?

In many cases, key skills, extra-functional capacities, transfer capacities and context-dependent tacit knowledge cannot be further operationalised and of necessity remain relatively abstract quantities (87). Many of these oft-repeated skills can also be described as personal skills, which, while they do not fundamentally replace the time-honoured virtues particularly in demand in Taylorist times, such as industriousness, neatness and punctuality, now tend to embrace categories such as creativity, initiative, communication and social skills, which, put alongside *technical skills*, are increasingly becoming the focus of attention. Finally, particular additional qualifications are frequently also demanded, such as relevant language skills, experience acquired in other countries, and supplementary studies, e.g. economics in the case of technicians, electronics and computer science in the case of fitters, etc.

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(87) Cf. the labour glossary of these terms in Volume III.

Owing to advances in labour market and occupational research, in education and vocational training research, and to the objectifiable knowledge and experience of those working in the relevant occupational fields, there is a great deal of information and knowledge available in respect of the status and development of concrete education and (vocational) training requirements in the various fields of activities. In most countries, this expertise is also more or less regularly and systematically compiled and made available to decision-makers in education and vocational training (⁸⁸). Unfortunately, however, this is usually done sporadically, not always very professionally and, above all, the results are often not available in the right place at the right time. The transfer between research and the experts on the one hand and policy and practice on the other does not always work, and the gulf between theory and practice sometimes appears unbridgeable. In the case of vocational training in particular, research is frequently dictated by interests and tends to be application-oriented, and the emphasis is on quick results. Methodological and pure research usually comes off badly. The development of a vocational training research culture and professionalisation of research appear to be problematical, owing to the variety of disciplines encroaching on this area and the emphasis on particular issues. And yet such development is urgently needed, in view of the increasingly complex, continually changing links, a context within which vocational training is becoming an increasingly significant economic, cultural and social factor.

Ongoing observation and analysis of trends in the development of occupations and qualifications and of occupational and training requirements that are changing ever more rapidly, and prediction or anticipation of them, are becoming increasingly important, in order to implement the necessary ongoing adaptation and renewal of education and vocational training provision and systems in the Member States, in the European Union, and in Europe as a whole.

Can the existing efforts, approaches, methods and institutions cope with this task, in the light of the trend towards an information, communication and knowledge society and in view of internationalisation? If not, how should and could these instruments be expanded or brought up to date?

The growing need to prepare innovations more efficiently and to implement and evaluate them more quickly, and the urgent need to monitor and, if necessary, expedite the change in employment and education/training, focus attention on the question of what methods, tools and institutions should be used to examine and assess these trends on an ongoing basis, at what rate and how often this should be done, using what methodology, and, finally, what effect this should ideally be allowed to have on policy and practice.

Essentially, four different levels of such analyses of qualifications and functions can be distinguished:

1. *Examination of job-specific qualification needs (skill needs analysis) at the level of companies* themselves, via interviews within enterprises: entrepreneurs, managers, works councils and employees (specialists) are directly surveyed and company processes or analyses of jobs or functions are related to existing and desirable qualifications. This is an approach that tends to be technocratic and to emphasise primarily specialist skills. As a rule, it assists companies in developing their staff recruitment and promotion policy. In addition, the consequences of major technological developments for working conditions and work organisation on the one hand and, on the other, company-oriented education and vocational training provision can be assessed. This level of research into requirements is essentially a field for industrial sociologists and economists (⁸⁹).

2. *Examination of individual occupations or narrowly delimited fields of activities* for a particular group of occupations, e.g. woodworking and wood processing or the glass industry, printing and publishing, i.e. for clearly defin-

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(⁸⁸) Cf. on this point the contribution by Kirsch/Verdier in Volume II in particular.

(⁸⁹) Cf. the criticism by Konrad of the functional analyses used in the United Kingdom to set occupational qualifications, in Volume II.

able sectors and occupational fields. Specialists of widely varying kinds work in this field, e.g. engineers and economists, since this activity requires an intimate knowledge of the subject and of the occupational requirements, as well as knowledge of the history of technological developments specific to the occupations and sectors. In addition to subject-specific questions, a part is also played by issues relating to the cultural and corporatist delimitation traditionally handed down and distinguishing the individual occupations and occupational activities involved. This research has both a technical dimension and a dimension involving social history and economic and career policy.

3. *Comparative qualifications analyses cutting across occupations and occupational groups, and qualifications analyses at sectoral level*, at the level of regions or entire Member States, in which the specific features of a whole cluster of occupations or fields of activity are surveyed, cutting across individual occupations and jobs or companies, in all their facets: specialist, general and personal characteristics, additional qualification requirements, etc. Here, the overlaps between workers' fields of activities, their reciprocal substitution or the possibility of substitution, their cooperation and their specific dependencies are brought out, as are the categories listed in point 2. Those working in this field tend to be education specialists, economists and social scientists, who base their work on a sociological approach and systems theory, or on socio-psychological categories. This research serves as a basis for developing new education and (continuing) training provision at sectoral and regional level for entire vocational training systems or areas thereof, and its objective is to adapt them to meet changing technical, social and cultural challenges.

4. *Qualifications analyses at the level of society as a whole and at macro level.* These analyses attempt to identify trends in the development of supply of and demand for occupations and qualifications at national and, in particular, European/international level, to predict their development and/or to elaborate various scenarios and strategies for alternative developments. Here, the emphasis is on economic and employment development in the relevant country or economic area, as well as the question whether and to what extent the relevant society is competitive, has been overtaken by events, or has lost touch in certain areas. At a time of internationalisation and increasing competition, research of this kind plays an increasingly important part in terms of the policies of Member States and the EU as a whole (⁹⁰). While in the past, when education and training systems were barely changing, this research was rarely of any practical consequence, and I feel that this was in fact the case in the EU for the last 20 years, demand for more comprehensive research into qualifications, with reference to entire national economies and cutting across them would appear to be rising again. The current challenges are probably inducing Member States increasingly to look beyond their own backyards again, as was the case at periodic intervals in the past at times of radical change. It is becoming increasingly rare for research of this kind not to involve a cross-border element and a comparative or European dimension. Political scientists, educational economists and labour market researchers in particular work in this field, gauging the effects of particular measures on target groups, sectors and occupations in the light of technological social and cultural challenges, helping to develop new measures, and involving themselves in changing the systems of education and vocational training, including continuing training. Here, comments on concrete requirements inevitably remain relatively abstract. As a rule, they have to be supplemented by or considered in connection with the forms of analysis mentioned in points 2 and 3.

Although instruments of this kind have been developed in more and more Member States in recent years – research and development institutes and consultancy and information facilities at sectoral and regional level have been active in many ways, including on behalf of politicians and the authorities – only rarely has it been ensured that the results of their endeavours also flow into policy and practice. There is still a considerable gap between theory and practice, between vocational training experts and practitioners, between researchers and users, and this gap urgently

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(⁹⁰) Cf. van Wieringen in Volume II on the scenario method.

needs to be bridged, if the innovation process is to be expedited and rendered effective (91).

Politicians and practitioners often frantically look for clear indications and concrete advice, in order to progress matters. Unfortunately, research bodies often come up with their findings too late, or in insufficiently concrete form. Only rarely do they take account of those using their findings when they formulate their hypotheses, and they rarely give them a chance to evaluate and comment on the work they have done just before and after it is completed. A genuine vocational training research culture and agenda have yet to be developed (92).

Although a great deal of money is made available by those commissioning the research, including and in particular at European level, the methods used in and findings of the research are frequently not soundly based. This is due as much to the lack of professionalism of many experts as to the lack of continuity in institutionalised research. Vocational training research is not always linked to pure research and university research; the use of *private consultants* sometimes of dubious value tends to be the rule rather than the exception. The necessary continuity and professionalism cannot be developed in this way. Much remains to be done here, at all the levels mentioned and in virtually all the Member States, in order to improve the conditions on which vocational training research is based and to make policy advice more effective.

There is a need for a centralising research promotion body or a vocational training research institute at national level and a decentralised structure of regional and sectoral research bodies, so that information, knowledge and expertise can be collected, exploited and disseminated centrally and the findings can simultaneously be enabled to flow both from the top down and from the bottom up, in a transparent and continuous fashion.

The decentralised structure should have both a sector-specific and a region-specific dimension. Both the central and decentralised structures should include representatives of the competent public bodies/ministries and local educational and labour management authorities, as well as local and sectoral organisations of the social partners, professional associations and trade unions. Experts, teachers and trainers, inspectors and careers advisers should also be involved in orienting the research and in its exploitation and dissemination. The products of these bodies should be made available to a wider public, or at least to the relevant 'expert' section of the public.

The main result produced by these research instruments and mechanisms should be a prototype profile, or several alternative proposals for future occupational and training profiles, i.e. a description of fundamental occupational and training requirements based on current and foreseeable socioeconomic requirements and knowledge against the relevant regional (93) and sectoral background.

While focusing on technical/specialist skills – i.e. the knowledge, skills and, if appropriate, personal characteristics essential to a particular clearly defined area of responsibility, expressed in terms of qualifications (94) – such a description should include the following elements:

Cedefop proposal for a description of occupational or training profiles:

(a) *General description of the area of responsibility.*

(b) *Description of the socioeconomic and sectoral context into which the description fits.*

(c) *Specific framework conditions under which the occupation is practised: e.g. legal, statutory protection of employees, and/or environmental conditions.*

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(91) Cf. the research of Hansen et al. on the effects of studies on the development of occupations, in the context of the Ciretoq network.

(92) Cf. the contributions by Kuhn/Schulte and Ant/Kintzelé in Volume II.

(93) Here, the term 'region' is understood as a generic term for geo-political administrative units: depending on the institutional conditions, this can be the subnational, national or supranational (European) level.

(94) *Savoir faire* or *skills, cf. also the work glossary in Volume III,* which will be provided via the Internet.

(d) *List of the main knowledge, skills and, if appropriate, personal characteristics (competences) necessary to perform the tasks.*

(e) *Particular intellectual and physical requirements.*

(f) *Overlaps or links with other fields of occupations and activities, possibilities for substitution with other occupations or occupational profiles, etc.*

(g) *Typical occupational progression and foreseeable occupational prospects.*

The customary access routes to this occupational activity in the regions/States concerned in the form of particular initial training/certification/accreditation and/or occupational practice/experience should also be described.

A whole range of players should be involved in the process of developing these occupational and training profiles. Specialists, professionals and experts from practice should make an inventory on the basis of clear standards set by government and the social partners and should develop the profile prototype(s); delegates from professional and employers' associations as well as from the competent trade unions or vocational associations should then be involved in discussing and adopting them before the State declares these profiles to be generally binding or lays down the relevant regulations or other rules. In this process, it is particularly important to assure democratic and transparent procedures, and to achieve a balance of power between specialists and the authorities on the one hand and, on the other, the more strongly interest-driven delegates from the associations.

To this end, many Member States have established specific research and development organisations as agencies subordinate to the competent ministries, either at inter-professional level or at the level of occupational groups or sectors. Certain occupational and vocational associations and sectoral or regional organisations have put in place their own development staff, foundations or institutes with the participation of employee representative bodies or trade unions, in the form of non-profit associations or companies under private law, with or without State funding. However, such an infrastructure does not exist in all the EU Member States, in all sectors, or at all training levels. This means that there is an urgent need for action.

Meanwhile, despite the need for broad coordination among specialists and associations, government and its administration have the final say in declaring such profiles to be generally binding, the extent to which they are binding, and their scope. They have to bring the interests of society as a whole to bear, and as far as possible to avoid advancing particular interests.

Improvement is still needed as regards expediting the work of all the players and making it more effective, and in respect of its potential to have an effect and its relevance to policy in all regions of the EU and all Member States; it needs to be made more transparent for all those involved and to be translated more rapidly into practice in initial training and, in particular, continuing training. Some of the contributions in Volume II go into detail about recent experiences in the United Kingdom, France and Germany in the field of preparing and applying new occupational and training arrangements (95). The contribution by Kirsch/Verdier on the subject of the comparison undertaken of the relevant traditions in Germany and France is particularly instructive.

Both approaches have their own specific weaknesses: the more *neo-corporatist* approach in Germany, in which the associations and the social partners usually (*have to*) agree before government and the administration issue appropriate standards, and the more *technocratic* French approach, dominated by specialists and government administration, in which the associations are consulted but not necessarily included in the decision-making.

Leaving out of account the approach in the United Kingdom, whose weaknesses, given the current challenges, recently manifested themselves (96), in Germany the weaknesses lie in the fact that although people are clearly under pressure to take action, they cannot always agree, and hence nothing happens or only half-hearted action is taken; and in France they appear to lie in the fact that a degree of actionism tends to prevail in government and the administration, which brings about no fundamental changes in occupational and training practice, since associations and companies frequently counteract what they do by virtually ignoring the new occupational and training profiles laid down when it comes to their own personnel policy and in corporate work organisation (97).

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(95) Cf. the contributions by Konrad and Kirsch/Verdier in Volume II.

(96) Cf. John Konrad (Volume II) who states that the British approach to defining national qualifications has been too mechanistic, too much confined to purely technical aspects, and was thus 'defective'. This approach is currently being revised.

The solution probably lies in making the mechanisms and institutions listed earlier more effective and more transparent, and making their working methods more viable in the medium and long term by structuring them on a specialist/scientific basis and on a basis of a known balance of interests. A mixed system which attempts to mediate between the German and French systems, could be most appropriate for Europe and its Member States and regions or sectors. At the same time, each country, each region and sector must take appropriate account of its specific starting conditions, which have evolved out of its history and occupational policies. The risks inherent in time pressure, technocratic actionism, and the lobbying from representatives of particular interests must also be avoided, as must that of being too oriented towards practice, which sometimes arises in the absence of concepts that are workable in the medium term – from an academic and a political point of view.

There is currently a need to adapt and improve the methods and tools used for ongoing analysis and investigation of (vocational) training requirements at all levels: local, regional, sectoral, national and European levels, obviously with varying degrees of abstraction. The aim is to inform, advise and, if necessary, orient players, decision-makers and practitioners, in order that they can make their decisions on the basis of sound specialist and scientific knowledge that is as broad and deep as possible.

Occupational and training profiles are changing ever faster, but teachers and trainers, parents, schoolchildren, trainees and students, careers advisers and employment offices need relatively stable indications of and reference standards for definite trends, and descriptions of occupational and training profiles derived from these. Owing to the duration of education and training stages, their activities achieve results only in the medium and longer term; therefore they need reference documents on which they can rely for a certain period, and which do not become obsolete at ever shorter intervals.

Nevertheless, research tools and mechanisms must, if appropriate, permanently accompany the process of change in training curricula and content. They should provide an early warning system that is in a position to signal to the players, in their respective contexts, whether and when they need to act, and which supports them in their daily decisions about what and why they are teaching.

Greater professionalisation and institutionalisation of vocational training, labour market and occupational research in all the Member States is now an essential framework condition. Institutions of higher education (universities and technical colleges) must be more committed to research into vocational training and continuing training than hitherto, teacher training and continuing training of teachers in vocational training and continuing training still needs to be made more demanding and to be put on an independent academic basis. At the same time, not only is there a need for applied research, but more importantly, (basic) vocational training research must be strengthened with reference to educational science and economics, social science and political science, in order to safeguard and continue what has been achieved in the medium and long term (98).

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(97) Cf. Kirsch/Verdier in Volume II.

(98) Cf. Grollmann, Philipp. and Sellin, Burkart: *Zum Stand der (Vergleichenden) Berufsbildungsforschung in der Europäischen Union* (The position of (comparative) vocational training research in the European Union), in Cedefop/DIPF (1999): Vergleichende Berufsbildungsforschung in Europa, Ansätze, Politikbezüge, Innovationstransfer (Comparative vocational training research in Europe, starting points, policy and innovation transfer) (in preparation).

Summary of main conclusions and recommendations (1)

1. Training and qualification requirements in the light of foreseeable demographic trends

In view of the long-term demographic trend, the population trend that will probably develop as described in Section I is likely in future to have even stronger effects on participation in and the structure of education and vocational education and training than is already currently the case. Attention is likely to continue to shift from initial training in the context of general school education to the occupational and vocational training of young adults and older persons in employment, i.e. to vocational adult education and to general continuing training, with reference both to the population of working age and to the population as a whole.

The capacity of a society to compete, to innovate and to adapt is fundamentally based on a balance in the age pyramid between those who are (capable of) working and those who are not working. Not only is the financing of social security and provision for old age dependent on this, but so too is the transfer of skills, knowledge and competences between generations, together with the renewal and further development of these, which are required at an ever more rapid rate. In the medium term, the foreseeable ageing of the population could have a detrimental effect on Europe's competitive position, unless there is considerable expansion of the access available to older sections of the population to lifelong learning and teaching.

Against this background, it is not only the frequently cited structural change in technology and the world of work that necessitates lifelong learning, but also the demographic trend and increased life expectancy, which are confronting ever larger sections of the working population with the need to retrain and reorient themselves in the course of their working lives, and which require societal institutions to change and update their teaching, learning and training provision, including the forms this takes.

2. Trends in the participation of young people in education and training

In the context of young people under 25, there is only a limited connection between high levels of education and qualifications and employment prospects, a connection which can certainly be confirmed in relation to all those in employment, as explained later in this document. In many countries, even if young people obtain qualifications at secondary stage II, whether they are formal qualifications of a general nature or qualifications of a technical/vocational nature, and in some countries even in the case of graduates, their employment prospects are no longer much better than those of young people who leave school early. In absolute figures, owing to increases in school attendance rates in the past, in most EU Member States they now make up the largest proportion of unemployed young people.

Owing to continuing qualifications deficits and the increasing demand for well-qualified workers in many fields of employment, on no account does this mean, however, that it is no longer worth investing in continuing education. This is worthwhile in terms both of employment prospects and safeguarding jobs and of earnings levels and careers. The current situation indicates, rather, major problems in highly-industrialised countries in the context of the future of paid work, working conditions and work organisation and, in particular, in the context of the entry of young people into adult and working life, in view of the uncertainties and orientation problems existing at a time of internationalisation, and of technological and economic change.

3. Levels of education and qualifications and employment rates among older people

Qualifications and education levels are an important indicator of the capacity for employment until an advanced age; moreover, employers appear to prefer to send less well qualified employees into early retirement or even to make them redundant, and to be less inclined to do this with more highly qualified employees. One reason for this is likely to be that more highly qualified people are more flexible and adaptable and (can) educate themselves further in good time and independently, and attempt to keep up to date with their subject. Incidentally, this behaviour is also confirmed by research into continuing training of employees in companies, e.g. Eurostat research from 1991. More highly qualified people take advantage of training opportunities much more often than do the less highly qualified. Of course the opportunities offered and the nature of their jobs are also likely to favour the participation of the more highly qualified; to date the work organisation and working conditions of the poorly qualified have rarely permitted them to participate in training during working hours. However, it is precisely older workers over 50 for whom appropriate training options have yet to be provided, namely options that take account of their previous education and their vocational and life experience. There is an urgent need to develop new methods and teaching and learning processes for this target group, if there is a genuine wish to maintain their capacity for employment until the official retirement age, which is normally 65. Forms of part-time work for older people combined with continuing training and new alternating forms of combined work and study can be just as meaningful for these age groups as for young people aged between 15 and 25.

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(1) To improve readability, the sources cited in the body of this volume are not cited again here; in this context, cf. the relevant passages of text in the individual sections.

4. Women and vocational training

Female employment can be expected to stabilise and expand further, and women can be expected to continue to participate, at an increasing rate, in (higher) education and, in particular, also in vocational training, including technical and scientific tertiary education. In the medium term, they are likely to draw level with men in terms of the numbers in these areas, as they have already done in continuing education and other tertiary education.

Changes in the content and structure of vocational training provision and the increased integration that is under way in respect of general education and vocational training at all levels of continuing education will support trends of this kind. With the decrease in the importance of hard physical labour and in the wake of the growing customer and service orientation in the context of modern industrial production concepts, new occupational and activity profiles are likely to evolve and new training content and methods to ensue, which will also be more attractive to women. The number of occupations and fields of activity dominated by men is likely to continue to decrease.

5. Employment and vocational training of low-qualified people in the EU

The supply of trained industrial and craft workers has now diminished to such an unexpected extent that shortages are currently again occurring and demand is increasing (although this is an economic trend rather than a structural one) – this demand can only be partially met. This is why non-nationals, even from non-Member States, continue to have extremely good employment prospects if they have the appropriate qualifications. Incidentally, this applies to an even greater extent to higher specialist and management staff, e.g. in the engineering sciences, such as mechanical engineering and information technology, electronics and electrical engineering in particular. Some people already see these gaps in qualifications as threatening Europe's status as a centre of industry. Thus there is no other option but both to expand the relevant (higher) education and vocational training provision in quantitative terms and also to improve its quality further.

To summarise, it can be confirmed that modern work organisation with high levels of productivity, flexibility and adaptability and a great capacity for innovation is now more dependent on highly qualified specialist and management staff in order to maintain and increase its competitiveness than was the case a few years ago. Teamwork, flexible working hours, and flexible forms of work organisation need employees capable of thinking for themselves and structuring their own work, who continuously educate themselves and are in a position to increase and expand their potential for creativity. Modern and efficient service and production concepts are inconceivable without employees who think and act for themselves. The blue- or white-collar worker performing repetitive piecework and characterised by a rigid division of labour is facing extinction.

However, education and vocational training do not reach all those active on the labour market who have qualifications deficits. It remains necessary for jobs to be created in the low-pay sector for low-qualified job seekers, in new labour-intensive fields of production of goods and of service provision. Environmentally compatible and close-to-nature production methods in agriculture and crafts appear to be coming (back), in order to take preventive action against environmental damage. They are more labour intensive, but in some cases also more expensive than other highly industrialised methods of the kind that currently characterise agriculture to a great extent and also, increasingly, the labour-intensive construction industry.

Meanwhile the mass unemployment in Europe in recent years, which has been comparatively well cushioned by society, is probably nothing compared with that which is developing in east Asia. Given the framework conditions in respect of demography and qualifications, Europe has a chance of overcoming the employment crisis in the near future. Other regions of the world may yet have to find a solution to their structural problems. They are only just beginning to recognise them, but it may still take years for them to overcome them in respect of all their dimensions.

6. Employment trends and labour market development in European economic and monetary union

If we wish to promote standards of qualifications linked to the assurance of particular social standards, the urgent question arises of whether and to what extent wages and salaries and, in particular, pay increases could and should be more closely tied to the qualifications of the labour force than has been the case to date in most countries, and of how these qualifications can be measured and applied. This would strengthen the capacity of the economy and of society for innovation, while at the same time preserving and increasing competitiveness, which is already at a high level now. Last but not least, this would also give low-qualified and older employees an incentive to participate in continuing education on an ongoing basis.

European economic and monetary union is likely to be accompanied by an improvement in the prospects for growth, but not necessarily by an increase in employment. The quest for employment-intensive and sustainable growth in Europe and for an appropriate policy mix is still under way. In the view of decision-makers, in addition to an appropriate wages policy and a bolder investment policy, not on the look-out for subsidies, and accompanied by appropriate monetary and fiscal measures, this increasingly includes safeguarding and expansion of the level of qualifications of the working population. Its employability must be maintained and improved, in particular via comprehensive reform of (higher) education and training systems. The introduction of new technologies and the updating of knowledge must be progressed, employment systems must be modernised, and living and working conditions must be improved. According to Agenda 2000, this also involves appropriate EU programmes and incentive measures, also including the countries of central and eastern Europe: the building up of trans-European networks, of research, education and training, the introduction of employment-intensive environment-friendly technologies and, in particular, measures to support the establishment and competitiveness of small and medium-sized enterprises.

7. Trend in occupations and employment in the service sector

The creation of new employment opportunities in this sector is very heterogeneous: some subsectors are expanding, while others are contracting. Recent years have seen substantial expansion of local and local-authority services in the fields of health care, social services and education, as well as in business services and environmental services. There has also been a degree of expansion in the hotel and restaurant sector and in leisure and recreational facilities, accompanying the increase in both tourism and business travel. In contrast, there has been little growth or even a reduction in certain other services such as transport and logistics or sales. The banking and insurance sector has been subject to significant contraction owing to the penetration of computers and the increasing use of the worldwide web and the Internet, and this trend will continue.

Against this background, the service sector is not automatically generating new employment prospects, as was assumed until recently. A specific policy continues to be necessary at all levels, to support sustained and at the same time effective or more intensive growth in employment in this sector.

The urgent question is how personal services in particular can be made more efficient and more socially responsible in the context of, for example, public and private partnerships, and how they can be given a more professional character in order to assure their quality. Their effect on employment cannot be overestimated. New forms of solidarity committees and so-called social companies or novel local employment initiatives are coming into being. They should, if necessary, be assisted with start-up funding and political support similar to that already frequently provided in the environmental protection sector, at least in the start-up phase. Development of this kind can make an important contribution to improving living and working conditions, can make certain localities attractive and, finally, can also contribute to economic development and social cohesion in the region concerned. Education and vocational training are an important element of assuring quality and of increasing the productivity and social responsibility of the relevant services.

8. Levels of employment and education/qualifications: Is there a connection?

The connection between the level of education and qualifications on the one hand and the employment level on the other is likely to become ever closer in the course of the structural change that is taking place. However, it is likely to be less and less a case of preparing people specifically for certain jobs available in the short term by means of specific specialised and technical vocational training, as is predominantly the case in the Anglo-Saxon countries and Japan. Instead, it is likely to be a case of giving young people and adult participants a good starting capital involving a profile of skills that is as broad as possible, with which they can find, or if necessary create, prospective employment for themselves locally or further afield, or become self-employed or establish new small and medium-sized enterprises.

9. Closing gaps in qualifications!

New forms of collective agreements or company agreements and, if necessary, new statutory regulations are likely to be required in order to facilitate permanent access to continuing training for members of the workforce throughout their working life. In particular, the question arises in this context of whether it may be desirable to link wages and salaries to qualifications and skills actually acquired by employees.

People with middle-level qualifications in particular are frequently highly motivated and creative, and are among those most likely to consider setting up a business; the creation and survival of small and medium-sized enterprises are dependent on competence based on comprehensive occupational experience and good formal and informal qualifications. New forms of support, information, consultation and continuing training urgently need to be made available to these target groups, in order to support the evolutional dynamics at regional and sectoral level. But formal vocational training at this level also urgently needs to be made more attractive and more easily accessible. It must, however, be based on new occupational and training profiles.

The transparency and coherence of occupational and qualifications structures must be assured and continuously updated, in order for it to be possible to choose courses and occupations more precisely and to offer appropriate careers advice and guidance, to study, teach and learn in a targeted and results-oriented way and, finally, to make education and training provision and services more dynamic. And this should be a continuous process, with varying degrees of abstraction, at both regional and sectoral level and national and European level.

It should be a priority for education and labour market policy to raise the level of qualifications of young people at the point of transition from school to working life, and of adults in connection with work and employment. Here, the emphasis should be on creating system-based structures, rather than on short-term measures and special programmes. In addition to the involvement of legislators at all levels of political intervention, but especially at regional and sectoral level, there is a need for the social partners in particular to follow new paths and develop new options deviating from full-time employment, for example in the context of the stereotypical 35/40-hour week. Greater flexibility of work and employment in this sense can be highly satisfactory and 'profitable' from every point of view, both for companies in terms of competition policy and for individuals in the context of planning their careers and lives. Under these conditions, fresh potential for creativity and coorganisation can be released in employees.

If the continuing deficits in terms of qualifications are not eliminated and the relevant gaps in qualifications are not closed, i.e. if efforts are not made to combat the even stronger polarisation foreseeable between high and low levels of education and training, disadvantaged people of a new kind are likely to emerge, which will continue to be excluded both from the use of new technologies and from the associated work organisation, production and services, and general communication. In order that new employment opportunities can be opened up and good career prospects safeguarded, appropriate qualifications and skills for every man and every woman are becoming ever more essential.

Rural areas and peripheral or backward industrial regions and sectors of the economy in Europe should be given even more support than is currently the case in their endeavours as regards qualifications. As the examples of the Lorraine region in France and the Ruhr area in Germany have convincingly demonstrated, and as the textile and clothing industries have shown in the past, even regions and industries which appear to be incapable of surviving can be modernised by means of specific investment in human resources. In this context, intensive technology, environmental compatibility and proximity to the customer, combined with good service and comprehensive qualification of young people and requalification of the older working population are important parameters for the positive evolution or revitalisation of entire regions or sectors.

10. Earning power and qualifications

Surveys by the Statistical Office of the EU show clearly that from a financial point of view, it is worthwhile for employees to invest in further education or higher education. Postponement of early paid employment is offset by the higher earnings associated with a higher level of education. However, this comparatively close connection appears to be even more marked in the case of older people. Against this background, the connection between the level of education and qualification and that of earnings could, if necessary, be more strongly formalised, e.g. via appropriate collective agreements at company and intercompany level; in this way the acquisition and retention or extension of qualifications could be made more attractive and appropriately rewarded. Wage and salary increments could be more closely linked to the acquisition of additional qualifications, including those at a level below higher education (EU level 5).

11. The development of occupations and qualifications: En route to the information, communication and knowledge society

Dissemination of the new technologies and, in particular, the ICTs is still just beginning in

Europe. Their potential is increasingly being recognised, but if they are to be fully exploited and disseminated, in terms of sustained economic and socially responsible or environmentally compatible use, a qualification offensive embracing all social strata is required. While hardware configurations and also most (standard) applications are reaching ever higher levels of perfection at ever lower prices, the skills and qualifications of most users lag far behind this potential. Such a comprehensive education, qualification and training offensive is required in order to take full advantage of these constantly multiplying possibilities on the one hand, but also, on the other, to guard against the risks associated with this reduction in costs and dissemination, to make people aware of the possibilities of manipulation, and to structure the associated socioeconomic change in an environmentally compatible and socially responsible manner.

Risks are, in particular, involved in the potential opportunities for manipulation and control on the part of manufacturers and major users with regard to consumers and users, employees and citizens, teachers and student, etc. If such risks are to be avoided and the possibilities are to be used for the benefit of all, there is a need for responsible consumers and employees and citizens who are involved in the process of the proliferation of applications and help to structure it. Comprehensive education and training is crucial, if this new potential is to be handled in a socially and economically responsible manner. New forms of polarisation and of marginalisation of whole sections of the population can be expected with all the attendant social ills, if education and training systems do not open their doors to this development and prepare as many people as possible for it: young people and adults, girls and boys, city- and country-dwellers, their own citizens and those of other countries, etc.

12. Environmental challenges

The environmentally sustainable development of trade and industry, involving utilisation of state-of-the-art technology and conservation of natural resources, harbours great employment potential. This development needs to be supported by a comprehensive change in the content of education and training at all levels and stages, in the context of both appropriate initial training and labour-market-related continuing training. Energy and raw materials, air, water and land must be used in an environmentally responsible way and as sparingly as possible. This requires a comprehensive qualifications offensive in just the same way as was made clear earlier in the context of the use of new information and communication technologies. High tech and low tech elements must, however, be taken into account together and in relation to one another, and the relevant consequences must flow into new education and training content at all stages of training.

New occupational profiles and training requirements are emerging, and this is resulting in a change in existing forms or additions to older forms of vocational training. This restructuring affects all levels of education and qualification in more and more EU Member States, but in particular, in respect of labour-market-related continuing training in the context of local-authority and regional initiatives and measures based on public or private endeavours: the motto is 'Think global, act local'. Globalisation in this sense is overdue.

13. Occupational fields, sectors of the economy and their prospects with regard to educational and qualifications requirements, regional and sectoral trends

As the examples mentioned demonstrate, there are many fields of employment in which there is a lot of ground to make up, a need which it is currently almost impossible to satisfy, partly because of major qualifications deficits, in both quantitative and qualitative terms. There is an urgent need to eliminate these deficits via a comprehensive qualification offensive on the part of State and private bodies. Meanwhile the public sector, i.e. schools and training institutions for which the State is responsible, is not in a position in either financial, organisational or educational terms to make efforts of this kind alone and without the participation of players in the relevant sectors and professional bodies. At the same time, the institutional framework conditions for such participation are still unsatisfactory in most Member States. Legal foundations and agreements between employer and employee bodies urgently need to be created or extended, so that the continuously required adaptation of supply structures in education and vocational training to meet these challenges can succeed at sectoral, regional and occupational-group level.

Funding mechanisms for the development and provision of vocational training on the one hand and, on the other, the collectively agreed conditions for employee participation, possibly during working hours, need to be improved, or have actually yet to be created. In most EU countries, the construction industry has a contribution-based fund that finances vocational training provision and participants. Funds of this kind or foundations should be established at national level and, if appropriate, at regional level, e.g. in the context of the public/private partnerships mentioned earlier, with the involvement of the social partners and their organisations, for all sectors if possible and for occupational groups below higher education level. Only in this way is it likely to be possible to eliminate the deficits mentioned on a permanent basis and to cope with ongoing adaptation of qualifications provision in line with ever more rapidly changing technologies and social and work-organisation conditions.

14. Changing work organisation and working conditions, effects on qualifications and skills

The increasing autonomy of employees in the wake of modernisation of work organisation, decentralisation of decision-making, increasing demands on every individual for loyalty, and the associated individualisation all necessitate a new medium that will create and preserve cohesion: this medium is qualification and development of skills, in-house continuing training and staff development, combined learning and working, whether at company or intercompany level, in cooperation with local educational establishments or institutions of higher education. The levels of qualification and competence of the workforce in general, also and precisely in terms of a collective, to use a term which has unfortunately been discredited, will increasingly become the focus of attention, if the survival of the enterprise is to be assured. Development and ongoing adaptation of them in line with changing challenges will be crucial to the competitiveness of enterprises, whether they are large or small, export-oriented or not, or whether they are operating in the primary, secondary or tertiary sector. In the course of this modernisation, a degree of responsibility not previously seen in this form will fall on individual employees. This is the real change in the paradigm that has been brought about by structural change. However, many people have so far failed to grasp this, people on both sides of industry, i.e. employer and employee associations and trade unions.

15. Occupational and training profiles with a promising future

There is currently a need to adapt and improve the methods and tools used for ongoing analysis and investigation of (vocational) training requirements at all levels: local, regional, sectoral, national and European levels, obviously with varying degrees of abstraction. The aim is to inform, advise and, if necessary, orient players, decision-makers and practitioners, in order that they can make their decisions on the basis of sound specialist and scientific knowledge that is as broad and deep as possible.

Occupational and training profiles are changing ever faster, but teachers and trainers, parents, schoolchildren, trainees and students, careers advisers and employment offices need relatively stable indications of and reference standards for definite trends, and descriptions of occupational and training profiles derived from these. Owing to the duration of education and training stages, their activities achieve results only in the medium and longer term; therefore they need reference documents on which they can rely for a certain period, and which do not become obsolete at ever shorter intervals.

Nevertheless, research tools and mechanisms must, if appropriate, permanently accompany the process of change in training curricula and content. They should provide an early warning system that is in a position to signal to the players, in their respective contexts, whether and when they need to act, and which supports them in their daily decisions about what and why they are teaching.

Greater professionalisation and institutionalisation of vocational training, labour market and occupational research in all the Member States is now an essential framework condition. Institutions of higher education (universities and technical colleges) must be more committed to research into vocational training and continuing training than hitherto, teacher training and continuing training of teachers in vocational training and continuing training still needs to be made more demanding and to be put on an independent academic basis. At the same time, not only is there a need for applied research, but more importantly, (basic) vocational training research must be strengthened with reference to educational science and economics, social science and political science, in order to safeguard and continue what has been achieved in the medium and long term.

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The production of this reference volume was considerably expedited by the fourth plenary meeting of the Ciretoq network, organised by Cedefop in cooperation with the Commission's research and development service. The participants and speakers should, at this point, be given a further opportunity to be heard. The report which follows can also be regarded as an introduction to Volume II and as a summary of a number of the contributions to be found therein.

Joint Cedefop/TSER conference (15-16 June 1998, Thessaloniki) including the fourth annual plenary meeting of the Ciretoq network

Summary record (¹)

1. Agenda, participants, etc.

The fourth annual plenary meeting of Cedefop's network on cooperation in research on trends in the development of occupations and qualifications in the European Union (Ciretoq), held in Thessaloniki, Greece, in June, was jointly organised with the European Commission (DG XII). This helped stimulate discussion about the interface between the Cedefop network's activities and other parallel research projects going on in the VET field and about the changing context against which all such work is carried out.

The joint Cedefop/TSER meeting comprised: (i) presentations covering four different areas of Commission-funded, targeted socioeconomic research (TSER), which was coordinated by Erhard Schulte from DG XII (final session); (ii) a review of progress on current work of the Ciretoq network, with presentations about recently completed and forthcoming study reports; and (iii) a forum for discussion of contributions for a forthcoming major Cedefop reference publication on European trends on occupations and qualifications (ETOQ). Some 50 delegates from more than a dozen different European research institutes attended, at the invitation of the Centre. A further 10 researchers from TSER projects were invited by the European Commission to present their projects and intermediate or final results.

The importance of the changing context in which Ciretoq operates was raised in a progress report prepared by the network's coordinator Burkart Sellin and summarised by Cedefop's Deputy Director, Stavros Stavrou, at the meeting. Policy decisions being taken by the EU Council, the European Parliament and by the Commission on employment-related matters in the wake of the Amsterdam Treaty would have an important impact on all forthcoming Cedefop activities, Sellin's report said. In particular, decisions were expected in the near future concerning a new generation of action programmes such as Leonardo II for VET, Socrates II for (higher) education and a renewed Youth for Europe programme.

It was appropriate, therefore, that the joint Cedefop/TSER meeting should provide a forum for cross-referencing and cross-fertilisation between Ciretoq network members and researchers doing parallel TSER work under the umbrella of the Commission's ongoing 4th framework research programme. It provided Cedefop with the opportunity to examine the results of the current programmes – e.g. Leonardo and Socrates – and take them into account in planning its future work across the board, including that of Ciretoq. As a result, the meeting was more open than previous Ciretoq meetings and allowed topics to be raised about the future direction of VET-research activities not only within Ciretoq and Cedefop but also on a more general European Union level. (The range of themes and topics covered by Ciretoq is included in the attached list. There is also a review of information on

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(¹) This report was drawn up with the assistance of John Manos, Grecofile, Athens. Person responsible within Cedefop: Burkart Sellin, Ciretoq Coordinator.

the TSER VET research projects presented at the conference.)

2. The ETOQ publication

The first session of the meeting was devoted to contributions to be included in the forthcoming reference publication on European trends on occupations and qualifications (ETOQ). Initially, the intention had been to include the results of some 20 studies in this publication; as a whole, they encompassed the results of relevant past study deriving from Ciretoq's activities and elsewhere. The publication is intended for a broader readership than just the policy-makers and researchers to which Cedefop reports are normally intended, it should equally address practitioners, e.g. teachers, trainers, information and guidance officers, etc.

3. Convergence and/or divergence of European VET systems

Some of the conclusions of a review, commissioned by the European Commission (DG XXII), on convergence and divergence in European education and training systems, conducted by the Institute of Education of the University of London, were presented by Tom Leney. That national policy makers were responding to common challenges in different ways was an inevitable consequence of underlying, firmly rooted differences, including both VET systems and labour market structures. This was not to be regretted but was a healthy reflection of societal and cultural diversity. The study (of the 10-year period between the mid-1980s to the mid-1990s), however, had identified a number of common trends, as have been noted by other researchers: for example, there had been wide-scale participation in post-compulsory education and training, and an associated 'academic drift'; the phenomenon of 'credentialism'; and a longer, riskier transition from education to work for individuals.

Academic drift meant that, with the passage of time, higher qualifications might be required for a particular type of employment, although the skill requirements might well remain the same. A similar phenomenon was the growing tendency in some countries for young people to obtain two qualifications to ensure their progression up the academic ladder (credentialism). These phenomena in mainstream education pathways were mirrored by the upgrading of vocational 'entry routes' to employment and an increased uptake of higher level vocational awards by those preparing to enter the labour market. Yet there remained a 'status divide' between vocational and general courses, Mr Leney said.

But at least as marked as these common trends were the underlying differences in education systems and labour market arrangements between different groups of countries. For example, despite the concern that some of Mr Leney's colleagues had begun to express about the rigidity of the dual system of vocational training in Germany, the study had found that the dual system seemed comparatively stable, in its particular national context. Similarly, both the more school-based systems of France and Finland and the more 'deregulated, individualistic, Anglo-Saxon' system of the UK reflected the realities of national labour market contexts, which needed to be understood and respected. Even where the aims of policy makers in different countries were similar, the practical consequences of their implementation were likely to vary, and would often show continuing divergence. Mr Leney referred, for example, to the extent to which 'decentralisation' of education and training systems was a common phenomenon in European countries. This term, it had to be remembered, might encompass moves towards greater institutional autonomy in the UK while in other countries it meant a greater role being played by other actors, e.g. the social partners in shaping the VET systems; in other Member States the term would refer to decentralisation to a region, language community or municipal or local level.

In addition, while general descriptions of VET systems were relatively straightforward to prepare on the basis of data now available, detailed examination of curricula was a far harder task. This represented a serious limitation for comparative analysis, Mr Leney concluded, but one which would be interesting to take forward in the future.

4. Commonality of European VET research issues

A potential for improvements in, and strengthening of, transnational VET research was highlighted by Michael Kuhn (ITB/University Bremen), who voiced criticism about the limited perspective of much VET research in the past and the lack of coordination between different programmes and activities in the VET research field. Mr Kuhn suggested that differences between national VET systems – related to what were often referred to as 'socio-cultural factors' – should not overwhelm the research community. There was a commonality in European VET issues which was often underestimated, the question was how much 'the internationalisation of our economies and the equalisation of technology innovations leads to a unification of different national VET systems'. Certainly, the degree of harmonisation would vary according to sectors, professions and regions, but, overall, current VET research perspectives were too limited. Within the EU, at least, there was a need for a true 'transnational and multicultural research agenda' which Mr Kuhn hoped would emerge under the auspices of DG XII's 5th framework research programme (see below).

Mr Kuhn explained the activities of FORUM, a new network for promoting European VET research cooperation, which had become a 4th framework research programme (TSER) thematic project. Among the aims of the Forum were overcoming inadequacies/shortcomings of existing VET research: the development of a common research culture and the assessment of synergy effects. He had criticised the sometimes excessive overlaps between research activities of different EU-programmes (ADAPT, Leonardo and the TSER strand of the 4th framework research programme); the limited links between pilot projects and follow-up work. He also stressed the fact that past VET research had tended to be rather 'contemplative' and only 'an appendix' to other disciplines, e.g. economy, sociology and (educational) psychology rather than a discipline of its own.

A presentation on the second day by Georg Hanf (BIBB/Berlin) picked up on contrasts between different national VET strategies; the demand for flexibility in labour and for a greater differentiation in qualifications (modularisation) especially in the framework of continuing education and training and at the interface between initial and continuing training, etc. The increasing importance of 'additional qualifications' was a natural consequence of these developments. Mr Hanf characterised four types of additional qualifications (*Zusatzqualifikationen*) based on the results of a six-country Ciretoq study which will be reported on in due course ('Additional qualifications at the interface between initial and continuing training', Hanf, G., Brown, A., Charraud, A. M., Markowitsch, J., Papatheodoussiou, T., Vind A.: BIBB/Berlin, IER/Warwick, CEREQ/Marseilles, IWI/Vienna, ITE/Athens and DEL/Copenhagen).

Anneke Westerhuis from CINOP then reported on a further Ciretoq study on European training stages in which five research institutes are engaged. A change in orientation had to be decided and the overall question of the need for a more specific European classification of qualifications and skills, as opposed to international standard classifications of occupations and educations (ISCO and ISCED), should be focused on in the meantime.

5. An example of applied Ciretoq research

The results of a major comparative Ciretoq survey were presented by Mario Gatti and Claudio Tagliaferro/ISFOL, which had been undertaken in Modena and Vienna on new occupational profiles in the engineering industry by researchers from ISFOL/Rome and IWI/Vienna (Jörg Markowitsch). The local and regional authorities and the social actors had been involved from the very beginning in this study which contributed to the fact that the findings had already had a strong impact on local/regional training provisions and plans.

6. 'Upgrading' versus 'bumping down' of educational and training qualifications

A macroeconomic forecasting methodology jointly developed by ESRI/Dublin and

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ROA/Maastricht had been described at the 1997 Ciretoq plenary meeting by Gerard Hughes (see Ciretoq newsletter 4/97). Andries De Grip contributed to the 1998 meeting a summary report on findings achieved and methodologies used in investigating the widening (wage) gap between the highly and low-qualified in a number of European Member States ('Trends in qualifications within occupations: upgrading versus bumping down', co-author Lex Borghans).

Mr De Grip's UK data included quantitative evidence of increasing demand for high-level qualifications and decreasing demand for the lowest-level qualifications between 1996 and 1997. However, whatever the causes of the increased level of skills typically found within occupational groups, the effects were not necessarily negative. Where increased supply of more highly qualified people was combined with inelastic demand for labour within higher occupational categories, then the effect would be entirely negative, a 'bumping down' effect whereby the more highly qualified suffer wage decreases and the lowest qualified suffer loss of occupational domain and unemployment. But the phenomenon might also reflect an upgrading of skills levels (within occupations) in response to factors such as technological/organisational developments or increased requirements for quality of goods and services. Where this is happening, was the case in the Netherlands, the overall effect is to reinforce international competitiveness and increase the number of high-level jobs available and/or the wages of the higher-qualified, due to increased demand for their skills. Unfortunately, in neither the case of upgrading nor bumping down do the low-skilled benefit directly. However, where upgrading of jobs was taking place, competitiveness of the economy as a whole benefited.

A second presentation based on application of the ESRI/ROA methodology was made by Sakari Ahola (University of Turku) entitled, 'The matching of educational and occupational structures in Finland and Sweden', which compared tertiary and sub-tertiary education systems in the two countries while stressing a number of similarities but also a number of important dissimilarities.

7. Limitations of labour market modelling and improving of research approaches to analysing trends

Robert Lindley (IER/Warwick) presented the findings of a Ciretoq survey about sectoral forecasting methodologies and theoretical approaches to the services sector: evaluating labour market models and theories as tools for examining the manufacturing/services interface; reviewing how structural change affects growth in services; and characterising the weakening 'locational' link between services and manufacturing. The paper circulated by Mr Lindley ('A study of the nature of "service" employment and methods for monitoring and modelling its evolution') reviewed labour market modelling and highlighted limitations of current methods and the potential for misleading policy-makers. In particular, the paper reviewed 'evidence for labour market responsiveness (of which) little refers to occupationally differentiated data'. He reviewed and summarised the state of play in the occupational modelling field, identifying the constraints that limit the significance of the models for forecasting purposes. The report derives from a three-country study report, which will be published in due course by Cedefop, entitled 'Employment and service growth, a joint study covering Germany, Greece and the UK', (IAB/IER/PIEKA).

A related presentation to the meeting was given by Oriol Homs (CIREM/Barcelona) on 'Methodologies for forecasting the pattern of employment and qualifications among the workforce at sectoral level', based on cooperation between CIREM, CEREQ/Marseilles and IER/Warwick. Mr Homs took up the dozen main problem areas associated with labour market modelling, which had been listed by Mr Lindley (lack of time series observations by occupation; small sample sizes in surveys providing occupational data; inconsistencies in occupational classifications; the weakness of data covering the fastest-expanding sectors; etc.), and suggested how future study priorities and methods should be adjusted to overcome them.

8. Training in, and for, SMEs

One of the contributions to the second part of Cedefop's forthcoming reference publication will deal with 'Competence and skill development at the micro-level' (covering small and medium-sized enterprises in general, not just those employing less than 10 people, which is the official definition of micro-level).

Some of the conclusions from a review of literature on training and skills needs of small firms were presented to the plenary meeting by John Konrad of the Leeds Metropolitan University's School of Professional Education and Development. Mr Konrad's paper, 'Skill and competence needs of small and medium enterprises and for the creation of new companies', took as its starting point the Enterprise Policy adopted at the Madrid European Council in 1995 and its objective to 'strengthen the competitiveness of SMEs and improve their access to research, innovation and information technologies and to training'. At the plenary meeting, Mr Konrad stressed that the key priority for SMEs was the survival of the business and not long-term development of human resources. As a result, there were significant disincentives for small firms' to invest in on-the-job training: fear of trained workers being 'poached' (i.e. hired by competitors); the small employer's priority of obtaining 'flexible, customised and company-specific training', etc. Nevertheless, Mr Konrad identified a wide range of SME-specific qualification schemes which have been developed over the past decade in the UK, in Australia and in North America. In his paper, these are reviewed under the two headings: university-level and sub-university level. Three case studies from the UK were discussed: the Learning in Small Companies programme of the University of Stirling; the National Centre for Work-based Learning Partnerships at Middlesex University; and the Short Course Accreditation Scheme at Konrad's institution, the School of Professional Education and Development in Leeds. Similar schemes operated in Australia (including MBA-level courses adapted to SME requirements) and in North America were discussed. At the sub-university level, the curriculum of the recently approved National Vocational Qualifications for owners of small business in the UK was discussed as were the open learning courses operated in Australia.

9. Trends in occupations and qualifications in the ICT sector

Skills and qualifications being demanded of information technology professionals are increasingly application-software-related and less concerned with formal computer studies qualifications or training than in the past, Werner Dostal (IAB, Nuremberg) told the Ciretoq meeting. He complained that there was evidence of this in Germany in the reduction in the number of computer science places being taken up at a higher education level; even though computer proficiency is, increasingly, a mandatory component of the necessary skills package for all professions, he stressed the increasing need for a specific higher education in informatics. Mr Dostal said he expected to see a trend away from employer-organised training in the IT sector. This was partly because of the increasing use by companies for IT resources of freelance and short-term contract workers, who were expected to make their own arrangements for keeping up with technical developments and for updating their skills. These new small businesses tended to work with university graduates more than traditional companies, which preferred people from different or parallel branches ('*Seiten- or Quereinsteiger*'), hence people who had mainly acquired the necessary skills via self-controlled learning or through specific courses within the system of continuing education and training, extending their former educational or training qualifications to a wide variety of disciplines. Mr Dostal had also analysed new forms of work organisation, e.g. teleworking, made possible by the increased use of and proficiency with ICTs. A shrinkage of stable segments of the labour market would be accompanied by an expansion to new forms, including new kinds of 'independent' work. A new demand for skills and qualifications would derive from this trend.

In the course of the debates, John Konrad (SPED/Leeds) agreed that the computer skills proficiency required for staff in a large university meant, above all, keeping up to date with Microsoft software developments. However, Gerard Hughes (ESRI/Dublin) questioned the extent of the trend towards greater self-education in the IT sector which had been forecast by Mr Dostal. It was only within companies that IT specialists could keep up to date with the state of the art, Mr Hughes said. Mr Dostal stressed, however, that the trend he had described was inevitable: increasing demand for application-software-related skills rather than basic/foundation training was leading to increased precariousness of employment in the IT sector. The high level of unemployment among older IT specialists was evidence of this unfortunate trend, he said.

10. Meta-competence skills

A presentation on the impact of information technology developments on occupations and on training needs was made by Mara Brugia on behalf of the author of the report, Garcia Gonzales, who had been unable to attend the meeting. This report was the result of case studies based on research carried out into the Spanish telecommunications and administration sectors. According to Gonzales's paper, evolution and liberalisation of the Spanish economy and IT developments had led to a greater demand for both specialist skills and for horizontal or core competences which cut across sectors and disciplines. Examples of horizontal/core competences were inter-personal skills, the ability to take a broad view of occupational situations/production processes, the ability to learn, etc. These requirements were being reflected in employers' in-company training activities, according to the survey, which were increasingly including modules on inter-personal relations, communication skills, personal development, self-perception, etc.

Another contribution from Spain, presented to the Thessaloniki seminar by Sofia ISUS, took up the issue of transversal and personal skills (*Competencias personales*), which, Ms Isus said, the Spanish education system was ill equipped to deliver. She described personal competences as including the ability to work in a team, creativity, imaginativeness, self-perception, etc. There was another important category of broad-based competences which Ms Isus called participatory skills (e.g. the ability to understand the point of view of others, social skills, etc.). These were increasingly as important as the technical or knowledge skills required to do a job and the methodological skills required to apply that knowledge. Ms Isus's remarks were supported, *inter alia*, by a delegate from Finland, who reported the findings of a survey of job advertisements which had come to similar conclusions: there had been a strong demand for 'social and communication' skills, also referred to as 'meta-competence' skills, on the part of employers in job advertisements.

11. Intermediate and final findings of (VET-) targeted socioeconomic research

The final session of the meeting was moderated by Erhard Schulte of the Science, Research and Development Directorate of DG XII, who provided a detailed explanation of the position of the TSER projects which were directly related to education research (38 projects) or vocational education and training research (19 projects) within the broader context of the 163 projects making up the TSER component of the European Commission's 4th framework research programme.

Research on education and training was one of the three broad areas covered by the TSER programme, the others being 'evaluation of science and technology policy options' and 'research into social integration and social exclusion in Europe'. Total funding for the TSER strand was ECU 105 million over four years, of which 23.5 % was allocated to education and training research. Three calls for tenders (in March 1995, October 1996 and September 1997) had resulted in more than 1000 researchers being funded under the TSER-strand of the 4th framework research programme. Mr Schulte reviewed the relevant EDUC/VET projects approved: five relating to the first call, seven to the second and six to the third call for expression of interest, had been selected by the Commission in this field.

12. The 5th framework research programme

The 5th framework research programme, which should start in 1999, is still under discussion within the European Council and Parliament, but Mr Schulte provided an overview of the situation at May 1998. Four thematic and three horizontal programmes had been agreed and Mr Schulte presented a breakdown of those elements that were relevant to VET. The most relevant of the three horizontal programmes making up the 5th framework programme was entitled 'improving human research potential and the socioeconomic knowledge base'. A key action under this strand was 'improving the socioeconomic knowledge base', which addressed four thematic sub-areas, including: 'societal trends and structural changes', 'technology, society and employment' and 'new development models fostering growth and employment'. Many VET-relevant issues, such as lifelong learning and the impact of technology and social regulation, were included as priority actions under these headings.

Of the eight presentations relating to individual TSER projects which were made in Thessaloniki, three examined the role of the human resource development function in vocational training and adult education and training, two dealt with the low-skilled and long-term unemployed, another two with the transition from education to employment and one with the role of work experience in VET.

13. The human resource development function

Ms Hilde Ter Horst (Centre for Applied Research in Education, University of Twente, the Netherlands) described a project examining the role of HR departments within organisations in creating opportunities for lifelong learning. A programme was being followed which involved reviews of literature on this area and case studies based on questionnaires or interviews with companies in seven European countries, with additional data being obtained from USA and Japan.

A second presentation related to a three-country project examining how HR departments approached the issues of age discrimination and development of skills among older workers. Tanja Tikkanen (University of Jyäskylä, Finland) explained the goals and design of the research, which also involves Keele and Lancaster universities in the UK.

Ylva Kjellberg (Lund University, Sweden) described a more broadly targeted research programme on the approach of HR departments to training issues. Based on a study carried out by Price Waterhouse management consultants in conjunction with Cranfield School of Management, the three-year programme involved examination of approaches to in-company training in 50 companies in Denmark, the Netherlands, UK, Sweden and Ireland. The objective was to 'help develop new strategies for competence development in companies operating internationally'. Ms Kjellberg expected a key theme of the findings to relate to the change in the HR function away from traditional industrial relations issues to 'softer' aspects of personnel management.

14. The low-skilled and long-term unemployed

Following up her report to the 1997 plenary meeting, Evangelia Kazamaki (IUI/ Sweden) presented some of the preliminary conclusions of the three-year, six-country study on 'New job skill needs and the low-skilled'. (The methodology, involving economic analysis of statistics obtained from labour source surveys, had been summarised in Ciretoq newsletter 4/97). The study used ISCED level 3 education as the criterion for defining the low-skilled, i.e. those achieving no more than compulsory secondary education. This group made up half or more of the total population of working age in some countries. All of the six countries involved (UK, Sweden, France, the Netherlands, Portugal and Germany), with the possible exception of Portugal, showed a similar deterioration, over the past decade, in the relative position in the labour market of the low-skilled, Ms Kazamaki said. In the UK, this had manifested itself in deteriorating real wages for the low-skilled and higher rates of involuntary part-time employment. Overall, Ms Kazamaki said, the number of sectors of the economy in which the low-skilled could easily find employment was shrinking – again with the exception only of Portugal – and the likelihood of unemployment/inactivity was higher than for other groups, particularly in Germany and Sweden. This was because 'skill-biased technical change' was causing a fall in demand for individuals in the lowest skill category and a rise in demand for those in the higher skill categories.

Conclusions with relevance for policy-making were emerging, Ms Kazamaki said. Longer and more effective education and training for young people would continue to reduce the low-skilled group in the population. Participation and success rates of young people could best be improved by boosting achievement in the period of compulsory education. Also, the general, transferable skills of the adult population were improved by employer-provided training but this is currently at a level which could not compensate for the deficit created by inadequate initial education and training.

Tjitske Brandsma (Centre for Applied Research on Education/University of Twente, Netherlands) discussed the effectiveness of labour-market-oriented training for the long-term unemployed. This involved analysis of practices in UK, Denmark and Greece. Among the difficulties arising, Ms Brandsma said, was the contrast between the high level of standardisation of training courses in Denmark and the very wide variation of practices followed by TECs in the UK, a factor which complicated the transnational comparisons being attempted.

15. The education/work transition of youth

Two TSER presentations related to analysis of the transition from education to work in a comparative European perspective. The first study, currently in its second year, was reported on by Michel Sollogoub (University of Paris I – Sorbonne). This project, examining how schooling systems handled the school-to-work transition, was based on questionnaire-type surveys involving two experts in each of 16 European countries and the organisation of annual review conferences. Data on pay levels in first employment was also being gathered. Mr Sollogoub summarised the initial findings, which included an assessment of the relative 'efficacy' of national schooling systems in handling the school/work transition (Norway was ranked highest in this respect); there was also evidence that more developed vocational training systems helped to reduce unemployment among young people.

The second TSER project concerned with the school/work transition involved analysis of factors influencing success and failure in education/training and labour market integration. Markus Gangl (University of Mannheim) described the structure of the project, 'A comparative analysis of transitions from education to work in Europe', which would make use of data from surveys of school-leavers in Ireland, Scotland, France and the Netherlands with additional data being obtained from Labour Force Surveys from a wider range of European countries. The other main participants would be ESRI/Dublin, CES/Scotland, DESAN Market Research/NL, ROA/NL and CEREQ/FR. Mr Gangl described how five principal factors had been selected as key 'indicators of variation' in the transition processes in different countries: (i) standardisation of qualifications and the extent to which they could be relied upon by employers both as indicators of skills and proficiency and also as 'proxy indicators for more diffuse characteristics such as underlying ability, motivation, punctuality and obedience'; (ii) differentiation, i.e. 'sorting and ranking' of young people, particularly between academic and vocational pathways; (iii) employer involvement in development of training provision; and (iv) the extent of State provision of youth training schemes.

16. Concluding remarks

The representatives of both organisers, the Commission and Cedefop, concluded by stressing the benefits of a common conference in promoting the exchange of information and in identifying common points for future cooperation. The conference should be seen as a pilot project; other common events and exchanges for debating and disseminating intermediate and final findings should be organised in the interests of all parties concerned.

TSER-VET-research projects (re-)presented at the joint CEDEFOP/TSER-Conference in June 1998 in Thessaloniki

1. *Forum of European Research in Vocational Education and Training*, Michael Kuhn, ITB, University of Bremen.
2. *Work experience as an education and training strategy: New approaches for the 21st Century*, Fernando Marhuenda, Universidad de Valencia.
3. *The role of human resource development within organisations in creating opportunities for life-long learning: Concepts and practices in seven European countries*, Hilde Ter Horst, University of Twente.
4. *Changing working life and training of older workers*, Tarja Tikkkanen, University of Jyäskylä.
5. *In-company training and learning organisations*, Yva Kjellberg, Lund University.
6. *DELOS – Developing Learning Organisation Models in SME-Clusters, Ruggiera* Sarcina, Fondazione Istituto Guglielmo Tagliacarne per la Promozione della Cultura Economica, Rome.
7. *New job-skill needs and the low-skilled*, Evangelia Kazamaki-Ottersen, IUI, Stockholm.
8. *The effectiveness of labour market oriented training for the long-term unemployed*, Tjitske Brandsma, Centre for Applied Research on Education, University of Twente.
9. *Schooling, training and transitions: An aconomic perspective*, Michel Sollogoub, University of Paris I (Sorbonne).
10. *A comparative analysis of transitions from education to work in Europe*, Markus Gangl, University of Mannheim, Zentrum für Europäische Sozialforschung.

Annex 2

Products to date and current research projects in the context of the Ciretoq Network

The Ciretoq Network has existed since 1995 and promotes research cooperation on the issue of European trends in occupations and qualifications, comparative surveys and investigations. It is a platform for the exchange of experience and information and for the dissemination of results at the interface between research and practical application. It serves, *inter alia*, to promote several of the key areas as regards CEDEFOP's medium-term priorities (see the CEDEFOP 1998 work programme for more details).

This list is intended to provide all interested parties with a clearer idea of what is available in terms of publications, reports processed for publication, other studies, brochures, newsletters and interim reports. All the documents were drawn up on behalf of CEDEFOP and reflect the Ciretoq Network's principal activities since 1995.

I. Study reports published

BIEGANSKY, RICHARD AND JEAN-PAUL CADET: *Evolution of employment and qualifications in motor vehicle repairs in France*, CEREQ/ Marseilles, CEDEFOP Document, 37 pp., Thessaloniki 1996.

BORGHANS, DE GRIP LEX; ANDRIES; HEIJKE HANS: *Concepts and methodology for labour market forecasts by occupation and qualification in the context of a flexible labour market*, ROA/Maastricht, CEDEFOP Document, 34 pp., Thessaloniki 1996.

BORGHANS, LEX; GERARD HUGHES AND WENDY SMITS: *The occupational structure of further and higher education in Ireland and The Netherlands*, ROA/Maastricht, ESRI/Dublin, CEDEFOP Document, 34 pp., Thessaloniki 1998.

CANNY, ANGELA AND GERARD HUGHES: *Occupational forecasts for 1998 for Ireland and their implications for educational qualifications*, ESRI/Dublin, CEDEFOP Document, 31 pp., Thessaloniki 1996.

HANSEN, CLAUS AGØ; GEORG HANF; GÜNTER HEITMANN AND TIES PAUWELS: *The impact on vocational training of studies analysing and forecasting trends in occupations, Case studies in Germany, The Netherlands and Denmark*, DTI/ Copenhagen; BIBB/Berlin; the Technical University of Berlin/Berlin; CINOP/s'Hertogenbosch.

TESSARING, MANFRED: *Forecasting sectors, occupational activities and qualifications in the Federal Republic of Germany, a survey on research activities and recent findings*, IAB/Nuremberg, CEDEFOP Document, 82 pp., Thessaloniki 1997.

VAN DEN TILLART, HARRY AND JOHN WARMERDAM: *Sectoral approach to training, synthesis report on trends and issues in five European countries*, ITS/Nijmegen, CEDEFOP Document, 110 pp, Thessaloniki 1998.

WARMERDAM, JOHN: *Sectoral training systems in a knowledge economy*, ITS/ Nijmegen; CEDEFOP Panorama, 47 pp., Thessaloniki 1997.

II. Other publications

CEDEFOP: Trends in the development of occupations and qualifications: *Network Ciretoq, a brochure presenting the objectives, methods and participants of the network*, available in DE, FR, and EN.

CEDEFOP (Panorama series): *Ciretoq interim report* available in DE, EN and FR, 11 pp.

Ciretoq Newsletters, two per year.

III. Forthcoming study reports

AHOLA, SAKARI (1998): *The matching of educational and occupational structures in Finland and Sweden, final report*, Research Unit for

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the Sociology of Education, University Turku/Finland.

Alves, Paulo; Franck Bailly; Rob van Krieken; Helena Lopes; Alan S. Paterson; Jean-Jaques Paul; Leonor Pires: *Knowledge-based society and emerging new intermediate technical-commercial skills*, Institut de recherche sur l'économie de l'éducation/France, Dinâmia/Portugal, SQA/Scotland.

Denys, J., R. King; K. Krüger, A. Papadakis-Klavdianou, J. Warmerdam: *The role of sectoral training agencies in the transfer of innovations in the agriculture and food/beverage sectors*, HIVA/Louvain, Reading University/UK, CIREM/Barcelona, Aristotle University of Thessaloniki/Greece, ITS/Nijmegen.

Freiche, Janine; Alison Matthews; Laurence Vitali; John Warmerdam: *How new technology brings new occupational profiles – case studies in the banking sector; a study covering The Netherlands, France, United Kingdom and Luxembourg*, INFPC/Luxembourg, ITS/Nijmegen, QCA/London, Entreprise & Personnel/Paris.

Gatti; Mario; Jörg Markowitsch; Claudio Tagliaferro: *Trends in occupations in the machinery industry in Vienna and Modena*, ISFOL/Rome, IWI/Vienna.

Gay, Catherine: *New qualifications and training needs in the environment area*, CG Conseil/Orleans.

Warmerdam, John: *A sectoral approach to training in the printing industry and the hospital sector*, ITS/Nijmegen.

IV. Projects in progress in 1998

Bellmann, Lutz; Robert Lindley and Olympia Kaminioti: *Employment and service growth, a joint study covering Germany, Greece and the United Kingdom*, IAB/Nuremberg, IER/Warwick, PIEKA/Athens.

Bouder, Annie; Oriol Homs, Robert Lindley: *Methodologies for forecasting the evolution of employment and qualification needs at sector level*, CEREQ/Marseilles, CIREM/Barcelona, IER/Warwick.

Hanf, Georg; Alison Matthews; Anders Vind; NN, Jörg Markowitsch, Theo Papatheodoussiou: *Additional qualifications at the interface between initial and continuing training*, BIBB/Berlin, QCA/London, DEL/Copenhagen and CINOP/s'Hertogenbosch, IWI/Vienna, TEI/Athens.

Heitmann, Günter, Richard Koch, Tim Oates; Anders Vind, Anneke Westerhuis: *European structure of training levels revisited*, BIBB/Berlin, TU/Berlin, CINOP/s'Hertogenbosch, CIREM/Barcelona, DEL/Copenhagen, QCA/London.

Warmerdam, John: *The role of sectoral training agencies in the transfer of innovations and enhancement of competencies: the cases of agriculture, food and beverage sectors*, ITS/Nijmegen.

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European trends in the development of occupations and qualifications

Volume I

This reference document is intended for a wide range of readers who wish to keep up to date with the most important trends in the development of occupations and qualifications in the face of current demographic, social, economic, technical, environmental and cultural challenges.

Volume I provides a general summary of the most important trends at macro level and makes recommendations and draws conclusions for policy and practice in vocational training and further training. The analyses are based on the findings of interdisciplinary and multidisciplinary research in the field of vocational training and the labour market, on comparative statistics drawn up by the European Statistical Office concerning practically oriented projects within the EU's education and vocational training programme, on the results of transnational studies in the framework of CEDEFOP's thematic research network (Ciretoq), and on findings from the EU-wide socioeconomic research programme in the field of education and vocational training. They stress the urgent need for training and qualification opportunities to be expanded at all levels in all regions of the EU, in respect of all target groups and all age groups, for economic and competitive reasons as well as for reasons of social and educational policy.

A second volume, which is more a kind of academic manual, is to be published in English. It provides a forum for experts from diverse disciplines to explain where the emphasis lies in their research.

In addition to these two volumes, a working glossary, an annotated, selective bibliography and an index (Volume III), and the German and French versions of Volume II, can be downloaded from the Internet (www.cedefop.gr).

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